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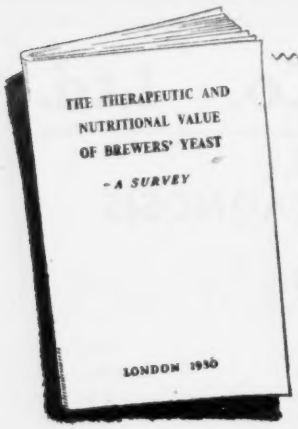

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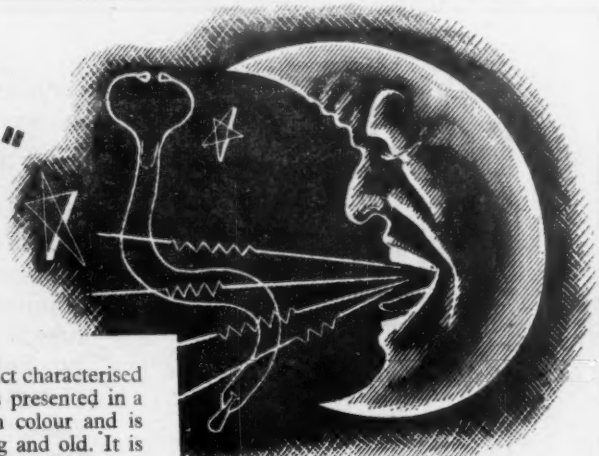

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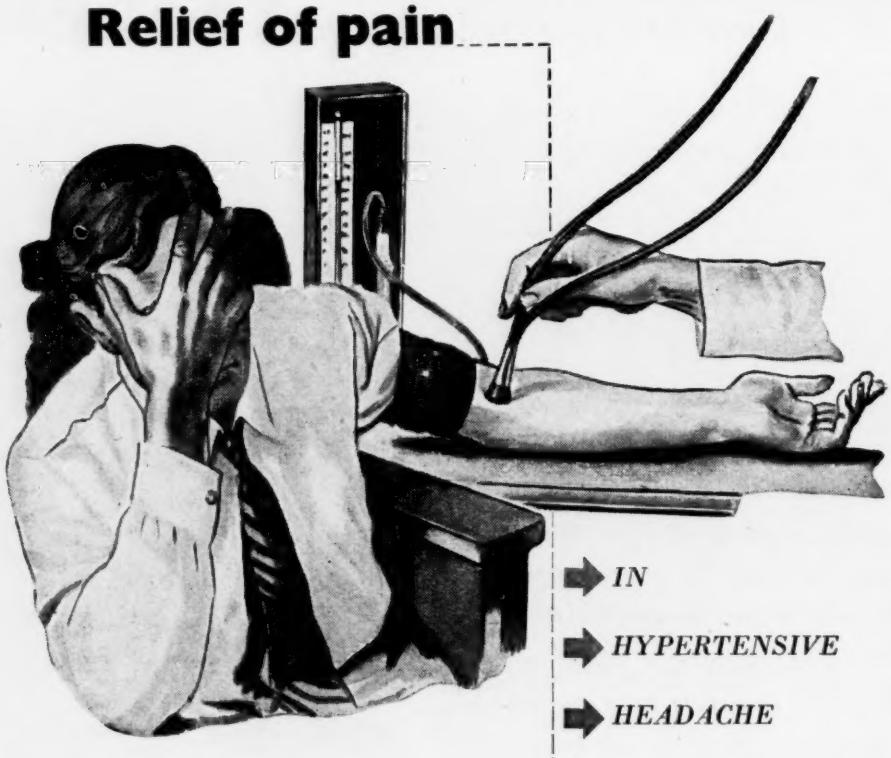

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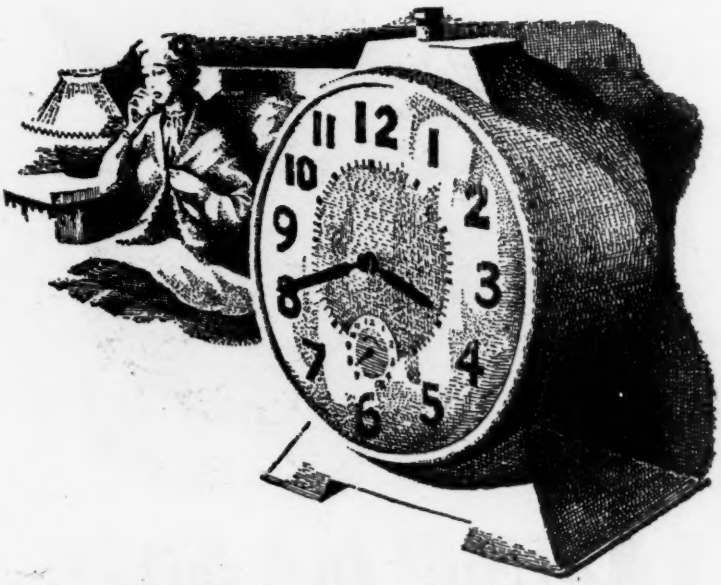

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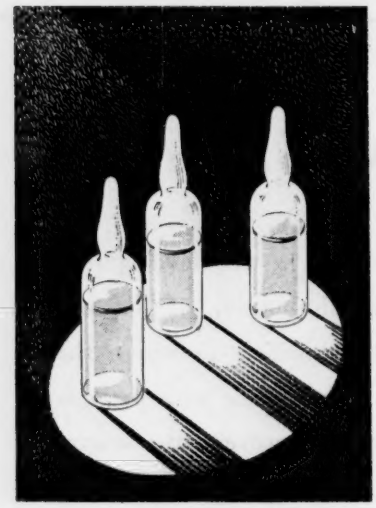

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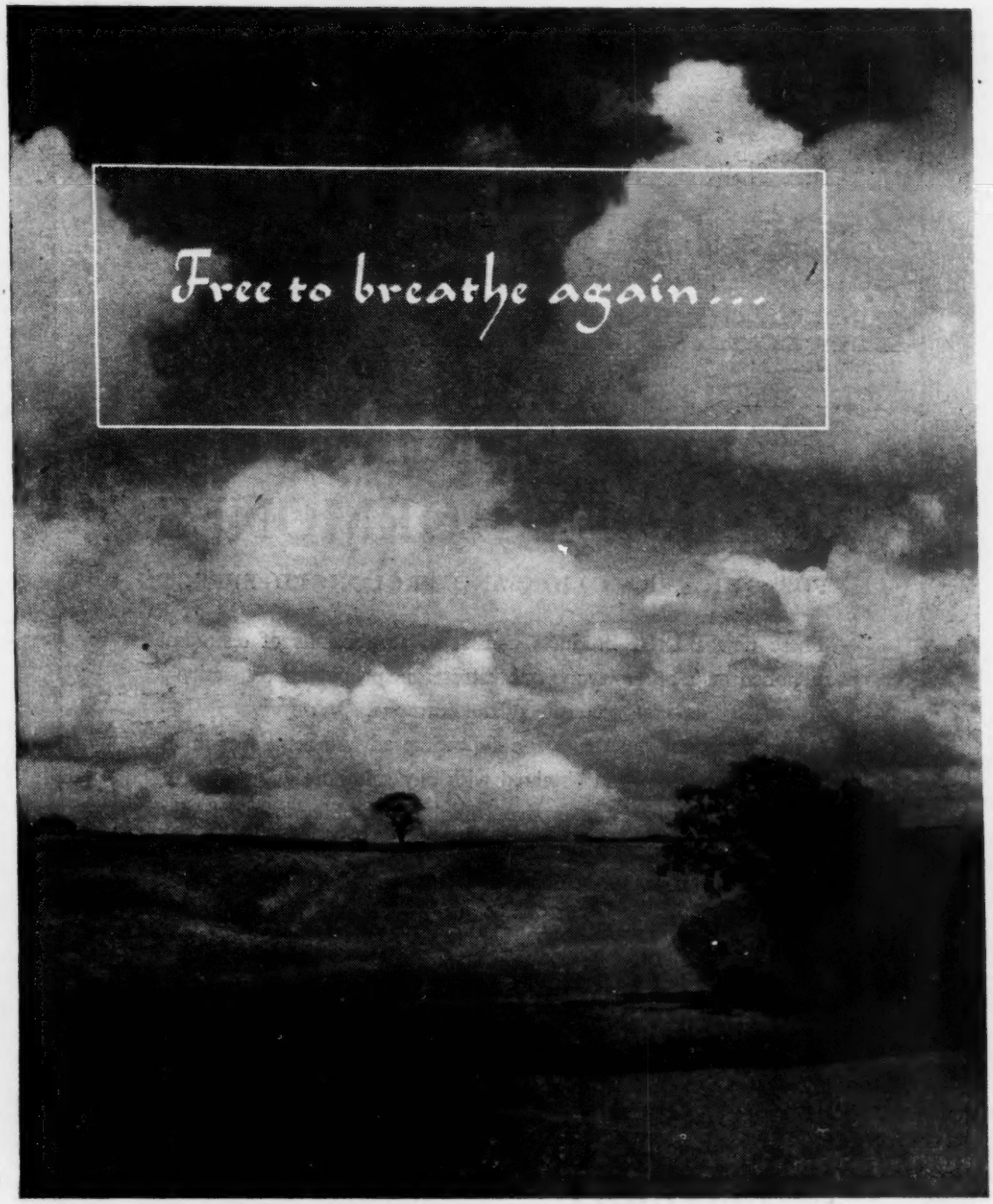

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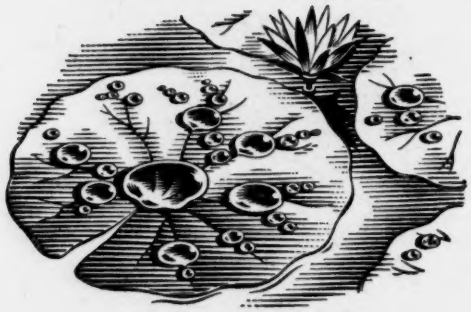

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Shor/E/204

THE ENDOCRINE CONTROL OF THE BLOOD-SUGAR*

C. N. H. LONG
M.D., Sc.D.

STERLING PROFESSOR OF PHYSIOLOGICAL CHEMISTRY IN YALE UNIVERSITY, NEW HAVEN, CONNECTICUT

A NORMAL man or woman can ingest several hundred grammes of carbohydrate a day without the level of glucose in the blood rising much above 160 mg. per 100 ml. The same person can subsist on a diet containing practically no preformed carbohydrate, or may even fast for many days, without the blood-glucose falling much below 70 mg. Thus with a dietary intake of carbohydrate ranging from 0 to 500 g. a day, the corresponding variation in the blood-glucose level is only 90 mg. per 100 ml. This indicates that the factors regulating carbohydrate metabolism are unusually precise in their operation and are such that at no time does the level of glucose in the blood fall below a certain minimum or rise to excessive heights.

Although I am dealing here with the influence of endocrine organs on carbohydrate metabolism, it must be remembered that their hormones are not the only factors responsible for the regulation of this metabolism. Other organs of the body play essential rôles in the maintenance of normal metabolism. Indeed, the hormones do not initiate metabolic transformations but merely influence their rate.

PHYSIOLOGICAL MECHANISMS CONTROLLING THE BLOOD-GLUCOSE LEVEL

The level of glucose or any other metabolite in the blood is a resultant of the rates of those processes which either add it to, or remove it from, the blood.

Glucose is made available to the tissues either by the carbohydrates or the proteins of the diet, or in the fasting state from the katabolism of the tissue proteins themselves, and it is largely utilised by the skeletal muscles and, to a more limited extent, by the other organs of the body.

The processes of digestion leave in the intestinal canal, for absorption into the body, a mixture of the three monosaccharides glucose, fructose, and galactose, together with those amino-acids which by later transformations can serve as a source of blood-glucose. Since fructose and galactose are readily transformed into glucose after absorption, the main problem of carbohydrate metabolism is largely that of the metabolism of glucose.

Intestinal Absorption of Glucose

The rate of absorption of glucose from the intestine is largely independent of its concentration and is effected by specific metabolic processes in the intestinal wall which are such that the quantity of glucose absorbed by the mucosa is within the assimilatory capacity of the tissues. This may be regarded as the first in a series of processes that prevent the blood-glucose from rising excessively while much carbohydrate is being ingested. The rate of glucose absorption is affected by endocrine factors, for it is decreased in hypophysectomised animals—a defect that is corrected by the injection of thyroxine (Russell 1940). Furthermore thyroidectomy or hypothyroidism in man is also associated with decreased absorption of glucose, and either experimental or clinical hyperthyroidism increases the rate considerably (Althausen and Stockholm 1938). In other words, the rate of intestinal absorption of glucose is adjusted to the metabolic rate of the tissues. Changes in the composition of the diet also alter the rate of intestinal absorption of glucose since this is most rapid on a high-carbohydrate diet and slowest on a low-carbohydrate diet. Since changes in the composition of the diet alter the relative activity of those members of the endocrine system concerned with the control of metabolism, we may gain from a study of the intestinal absorption of glucose some insight into the regulation of carbohydrate metabolism.

Formation of Glycogen by Liver

The next organ in the body that participates in the supply of glucose to the tissues, and hence influences the blood-glucose level, is the liver, which not only retains a considerable portion of the absorbed glucose as glycogen for future needs but also (which is of even greater importance) forms glycogen from non-carbohydrate substances (gluconeogenesis) and hence adds glucose to the blood at times when either no food is ingested or the diet contains but little preformed carbohydrate. Here again the rate of glycogen formation, as well as the rate of its release to the circulation, is significantly affected by endocrine factors. For instance, it is well known that adrenaline, and probably a hyperglycæmic factor from the pancreas, accelerate glycogenolysis (Sutherland 1950). Insulin influences the rate of formation of glycogen from glucose, and the rate of formation of carbohydrates from the products of protein katabolism (gluconeogenesis) is under the control of the adrenal cortical hormones (see below).

Rôle of Kidneys

The kidney tubules also play an important, if not always appreciated, part in the regulation of blood-glucose. It is well known that all the glucose of the plasma is filtered into the glomerular fluid, whence, under normal conditions, it is completely reabsorbed into the circulation by the specific activity of the renal tubules. The metabolic processes involved in this transfer of glucose across the tubular cells are probably very like those operating to transfer glucose across the intestinal mucosa. At any rate their capacity to remove glucose from the glomerular fluid is limited to a maximum, which may be exceeded when too much glucose is presented to them. This maximal absorptive capacity is influenced not only by continued exposure to high glucose levels in the glomerular fluid, often expressed by the so-called raised renal threshold in diabetes, but also apparently by the activity of the endocrine system. Thus it has been reported that the maximum renal absorptive capacity for glucose is increased in hyperthyroidism, and certain adrenal steroids are said to decrease it. The classical example of the effects of interference with tubular reabsorptive capacity is that of phloridzin poisoning. Here the inhibition of reabsorption produced by phloridzin not only lowers the blood-glucose level but also forces the organism to make good the urinary loss of glucose by an enhancement of gluconeogenesis.

The kidney also shares with the liver the ability to form glucose from carbohydrate sources. How important a contribution this may be to the maintenance of blood-glucose is not exactly known, but recent studies indicate that in some circumstances it may be fairly large.

Summary

We may conclude at this point that the rate of entry of glucose into the circulation is regulated by the activity of three organs: the intestine, the liver, and the cells of the proximal renal tubules. Among these the liver is the most important since it not only releases its preformed stores of glycogen but also manufactures glucose for the needs of the body from smaller molecules

* The 1951 Banting memorial lecture of the Diabetic Association.

derived from the intermediary metabolism of either proteins or carbohydrates.

UTILISATION OF GLUCOSE BY TISSUES

Glucose, whether derived from the diet or furnished to the body by the liver, is utilised in the tissues by three main methods of metabolism :

(1) The first of these is transformation to glycogen either in the liver or in the muscles. Though the subsequent course of degradation of glycogen is different in these tissues, the muscle glycogen only indirectly serving as a source of blood-glucose, the synthetic mechanism appears to be the same in both. The most important step in utilisation of carbohydrates is the formation of glucose-6-phosphate from glucose. This reaction, which is catalysed by the enzyme hexokinase, has been suggested by the Coris and their colleagues (Cori 1945–46) as the point upon which both insulin and an unidentified anterior-pituitary hormone exert their effects. Their experiments suggest that the pituitary factor inhibits this enzyme —an effect that would reduce the utilisation of glucose in any form and lead to the accumulation of it in the blood. Insulin, on the other hand, is said to remove the inhibition imposed by this pituitary hormone, and would in consequence increase glucose utilisation.

(2) The second method of utilisation of glucose is oxidation to carbon dioxide and water by a preliminary series of transformations by which either a three-carbon derivative (pyruvic acid) or an unknown two-carbon compound is formed. Either or both of these is next oxidised by a series of enzymes and catalysts in steps known as the tricarboxylic-acid cycle. This cycle is also believed to be the final common oxidative pathway for the intermediary metabolites derived from the katabolism of fatty acids and proteins.

(3) The third method of utilisation of carbohydrates, and one about which least is known, is the formation of fatty acids. This transformation, as Stetten and Boxer (1944) have shown, is quantitatively the most important. The fatty acids formed in this manner may be stored to an almost unlimited extent in the fat depots or may be more immediately utilised for the needs of the organism.

These, then, are the main methods of glucose utilisation and consequently variations in the rate of these processes will largely determine not only the height but also the direction of change of the blood-glucose. Indeed, the regulation of the blood-glucose level by the hormones is affected by influencing these metabolic transformations in the various tissues of the body.

EFFECT OF INSULIN ON UTILISATION OF CARBOHYDRATES

The importance of insulin in preventing an excessive rise in blood-glucose is due to its capacity to accelerate the utilisation of carbohydrates in the tissues. It is the only hormone that does this, since all the others either do not affect the blood-glucose level or else increase it.

The work of recent years has shown that insulin has an effect on all three main methods of carbohydrate utilisation. Thus, it increases the formation of glycogen from glucose both in the muscles and in the liver. In the liver this effect may be masked if the insulin is contaminated with the hyperglycæmic factor from the pancreas. The possible participation of insulin in the hexokinase reaction has already been mentioned.

Insulin has also been shown to participate in the processes by which glucose is converted to fatty acids. In its absence from the body the amount of dietary glucose transformed into fat is reduced to some 10% of the normal rate (Stetten and Boxer 1944, Brady et al. 1951, Chernick and Chaikoff 1951).

The participation of insulin in the cyclic changes that result in the complete oxidation of glucose intermediaries to carbon dioxide and water has also been suggested. At present, however, there is no unequivocal evidence that insulin directly catalyses any of the reactions of the tricarboxylic-acid cycle.

The participation of insulin in the formation of fatty acids allows some deductions to be made about the well-known relation between obesity and diabetes in man. In a person maintaining a constant body-weight the energy represented by the food intake is balanced by that expended in the bodily activities. It may be assumed that the transformations undergone by carbohydrates or their metabolites require that the pancreas furnish a certain quantity of insulin a day to accomplish them. On the other hand, a person who habitually ingests carbohydrates and other foodstuffs in excess of his daily energy requirements deposits fatty acids in the depot areas of his body. The fatty acids formed from carbohydrates, but not used, nevertheless require an amount of insulin over and above that needed by those who maintain a constant body-weight, and this insulin to all intents and purposes is wasted. In other words, the continual and unnecessary addition of fat to the body stores may be regarded, in its effect on the pancreas, as equivalent to a partial pancreatectomy. Furthermore, when it is remembered that this addition of unnecessary quantities of fat goes on for months and years, it is perhaps not surprising that ultimately the islet tissue becomes unequal to the demands on it. The insulin deficiency will develop insidiously and at least for a time may be corrected if measures are taken to restrict the food intake to a point where excessive fat is not stored in the body. That this can occur has been shown by Newbergh, whose success in the restoration of normal carbohydrate tolerance in a proportion of obese diabetics is well known. It is also reflected by the recognition that an important part in the treatment of obese diabetics is to restore their normal body-weight before attempting exact appraisal of their insulin requirements.

On the other hand, it is equally apparent that in some other obese diabetics the functional impairment of the islet cells may have proceeded to the point where merely restoring the body-weight to normal still leaves them with a deficient production of insulin. In such cases only the administration of insulin can restore their requirement for this hormone.

Lawrence (1951) has named the diabetes associated with obesity "lipoplethoric diabetes." His explanation of the high incidence of diabetes in the obese middle-aged man or woman differs somewhat from that given above. He suggests that hyperglycæmia and glycosuria are a reflection of the deficient capacity of the over-loaded fat cells to form more fat from carbohydrate. It may well be that the point of breakdown in the metabolism of these people is in the peripheral tissues, but it seems equally possible that the fragile cells of the islets of Langerhans are the first to yield.

Some work done in my laboratory on the effects of experimental obesity on carbohydrate tolerance illustrates that many of the consequences of obesity in man may be reproduced experimentally in animals (Brobeck et al. 1943).

Suitable bilateral hypothalamic lesions produced by electrolysis in the brain-stem of rats or of monkeys leads to the rapid development of enormous obesity. In this way it is possible to produce rats weighing over 1000 g. and to increase the body-weight of macaques from 3 to 18 kg. in a few weeks.

The cause of the obesity is the intense voracity that develops as soon as the lesions are inflicted. These animals are short-lived, often develop renal and vascular disease, and furnish an interesting confirmation of the deteriorations of body function too often found in man as a consequence of excessive indulgence in food.

Some of these obese animals develop a progressive impairment of carbohydrate tolerance, which in the rat is noteworthy because in this species the pancreas

is more resistant to insult than it is in other species. If the pancreas of the rat has been partly removed, but not so much as to cause glycosuria, the voracity and obesity that follow such brain lesions are at once reflected by the appearance of glycosuria. Of greater importance is the observation that, after the obesity has persisted for a while, reduction of food intake to normal levels no longer brings about a disappearance of glycosuria. So far as can be judged, the fat metabolism of these animals is normal, and the conclusion is that the impairment of carbohydrate tolerance is a consequence of a relative deficiency of insulin.

MAINTENANCE OF BLOOD-GLUCOSE LEVEL DURING FASTING

The importance of maintaining a minimal blood-glucose level of about 70 mg. per 100 ml. when either no food is available or the diet contains no preformed carbohydrate is, in the higher forms of life, to be attributed to the obligatory requirements of the nervous system. An animal deprived of the capacity to maintain an adequate supply of glucose soon succumbs, and death is attributable to the failure of this tissue only, since the other tissues of the body are quite able to exist when no glucose reaches them through the blood-stream.

There are two ways in which the organism can maintain the blood-glucose during such periods: (1) the formation of glucose from non-carbohydrate precursors, largely proteins and their derivatives; and (2) reduction of the utilisation of glucose to the minimum essential for the maintenance of the nervous system. Both mechanisms are influenced by the endocrine system.

The chief clue to the nature of this endocrine control is furnished by a comparison of the effects of fasting on normal and on hypophysectomised animals. For example, a normal rat may fast for days without developing serious hypoglycæmia, but the hypophysectomised rat dies in a few hours. If simultaneous observations are made on the liver glycogen, it will be found in hypophysectomised animals that, as soon as the glycogen falls to a low level characteristic of fasting, the blood-glucose also begins to fall. This does not happen in normal animals, even when the liver glycogen is reduced to an equal degree, indicating clearly that the effect of the mechanisms responsible for the maintenance of the blood-glucose level is greatly reduced in the absence of the pituitary gland. It is the loss of the anterior lobe of the hypophysis that is responsible for the effects observed.

Another striking difference between the behaviour of normal animals and that of hypophysectomised animals is in the effect of fasting on the muscle glycogen. In normal animals, even fasting to the point of death, the muscle-glycogen level, after an initial fall, is maintained; but in hypophysectomised animals the muscle-glycogen level rapidly falls. This indicates an abnormally rapid consumption of carbohydrate during a time which, in normal animals, is associated with a minimal utilisation of this substance. This is also suggested by the high respiratory quotient maintained by these animals while fasting.

The remarkable amelioration of pancreatic diabetes associated with removal of the anterior lobe of the pituitary is well known.

The metabolism of total diabetes and that of the fasting state have many points of similarity: indeed, in retrospect the effects of hypophysectomy on total diabetes might have been deduced by knowledge of its effect on fasting.

Both in diabetes and in fasting there is an increased rate of gluconeogenesis from protein, a decreased utilisation of carbohydrate, and an increased utilisation of stored fat. The chief difference is that in diabetes the blood-glucose level is excessively high, whereas in fasting it is at the lower limit of normal. Hypophysectomy produces in both conditions a fall in the fasting blood-glucose, a decrease in gluconeogenesis during fasting, and an increased utilisation of carbohydrate. Further, the injection of crude extracts of anterior pituitary not only exacerbates the mild diabetes of hypophysectomised depancreatised animals but also confers a normal resistance to fasting on hypophysectomised animals.

These experiments, although they do not tell us whether it is the lowered rate of gluconeogenesis or an inability to reduce carbohydrate utilisation that is responsible for the inability of the hypophysectomised animal to sustain a fast, or for the amelioration of a total diabetes, at least clearly indicate that the hormones of the anterior pituitary have a considerable influence on one or both of these processes.

METABOLIC HORMONES OF ANTERIOR PITUITARY

The further analysis of the effects of loss of the anterior lobe of the pituitary gland on carbohydrate metabolism, and of those following injections of crude extracts of anterior pituitary, is made difficult by the fact that the pituitary secretes at least six hormones—the two gonadotropic hormones, the thyrotropic hormone, the adrenocorticotropic hormone (A.C.T.H.), the lactogenic hormone, and the growth hormone.

The gonadotropic hormones and the thyrotropic hormone may be excluded from further consideration because removal of the gonads or of the thyroid does not reproduce either sensitivity to fasting or any amelioration of total diabetes. The lactogenic hormone seems to be of little importance as a regulator of carbohydrate metabolism in the mammal—judging by the failure of highly purified preparations to influence the blood-glucose or the diabetes of the Houssay animal. The exclusion of these four hormones leaves for further consideration A.C.T.H. and the growth hormone. Since A.C.T.H. can only influence metabolism by its capacity to increase the rate of secretion of adrenal cortical steroids, it is necessary, before it also can be excluded, to consider the influence of the adrenal cortical hormones on carbohydrate and protein metabolism.

ADRENAL CORTEX AND CARBOHYDRATE METABOLISM

It has been known for many years that both patients with Addison's disease and animals deprived of their adrenal glands often develop hypoglycæmia. The susceptibility of adrenalectomised animals to the development of hypoglycæmia while fasting, although not so marked as in hypophysectomised animals, is very evident. Furthermore, it is accompanied, at least in the fasting adrenalectomised rat, by a diminished rate of urinary excretion of nitrogen. This is not due to a failing renal function, since it is observed in animals receiving adequate amounts of sodium salts and water while fasting. Since the quantity of urinary nitrogen is a reflection of the amount of non-carbohydrate precursors available to maintain the blood-glucose level, these results indicate that in the adrenalectomised animal the development of hypoglycæmia during fasting is partly due to the decreased rate of gluconeogenesis from the tissue proteins.

This concept is supported by the quantitative study of the effects of the injection of adrenal cortical extract or of steroids of the cortisone type into fasting adrenalectomised rats (Long et al. 1940). There is a significant rise in the blood-glucose level and a tenfold to twenty-fold increase in liver glycogen without any change in the amount of muscle glycogen. Consequently the katabolism of tissue protein must have been accelerated, and this is confirmed by the observation that there is increased urinary excretion of nitrogen during the injection period, which fact suffices to explain the new carbohydrate found in the body-fluids and the liver.

It might be argued that the above experiment is merely another example of the efficiency of substitution therapy and affords no proof of the direct participation of adrenal cortical hormones in gluconeogenesis. However, comparable injections of these hormones into normal fasting rats also is followed by an accumulation of liver glycogen and slight hyperglycæmia, and by a considerable increase in the urinary excretion of nitrogen, again sufficient to explain the extra carbohydrate found in the injected animals.

When fasting hypophysectomised rats are injected with adrenal cortical extract, the blood-glucose level is maintained and the amount of liver glycogen is increased. However, the increase in liver glycogen is much less than in normal animals, even though the urinary increase of nitrogen is as great. At the same time the low muscle-glycogen level found in fasting is not improved by treatment with cortical hormones. These two points of difference in the response of hypophysectomised animals —a smaller increment in liver glycogen and a persistence of subnormal muscle-glycogen levels—indicate that not all the defects in the fasting metabolism of hypophysectomised rats can be repaired with adrenal cortical hormones. Since the administration of crude anterior-lobe extracts restores the normal state, it seems clear that it is not only the A.C.T.H.-content of these extracts but also some other anterior-lobe factor that is required for the establishment of the normal fasting metabolism. Some insight into the nature of this factor may be gained from the observation that a high rate of utilisation of carbohydrates still persists in fasting hypophysectomised rats treated with cortical hormones. This may be deduced from the smaller increment in liver glycogen and the persistence of subnormal muscle-glycogen levels.

Nevertheless, there is little doubt that A.C.T.H. and the adrenal cortical steroids are a major factor in enabling animals to maintain the blood-glucose level while fasting. They apparently accomplish this by accelerating the rate of protein katabolism and hence make available intermediary metabolites that are converted into liver glycogen. At present it is not known at what point in the chain of these reactions the hormones exert their effect. It could be in the breakdown of the proteins to amino-acids, or in the de-amination of the amino-acids, or in the conversion of the carbon residues to liver glycogen.

The importance of a simultaneous depression of carbohydrate utilisation and an increased rate of glyconeogenesis in maintaining the blood-glucose level has been pointed out above. The influence of adrenal cortical hormones on carbohydrate utilisation in the tissues is most easily demonstrated in animals subsisting on a high-carbohydrate diet, since any changes are more easily detected. It has been clearly demonstrated that in these circumstances the 11-oxygenated adrenal steroids and A.C.T.H. depress the utilisation of carbohydrate and, if treatment is continued, cause a temporary diabetic state characterised by resistance to insulin.

It has already been pointed out that the similarities between the metabolism of fasting and that of total diabetes might have allowed a prediction to be made that, since hypophysectomy modifies the response of the organism to fasting, it would also attenuate a total diabetes. Such a prediction was, of course, not made, and it is only since the pioneer work of Houssay that we have come to appreciate the fact that the endocrine control of certain metabolic transformations manifests itself both in fasting and in total diabetes.

The same hypothetical line of reasoning would also have led us to predict, from the effects of adrenalectomy on fasting, that adrenal deficiency would also modify total diabetes. Certainly Lukens and I were stimulated by other considerations when we made our experiments on the effects of adrenalectomy on pancreatic diabetes (Long and Lukens 1936). We intended then to determine whether or not some of the effects of hypophysectomy were due to the atrophy of the adrenal cortices that was known to follow this operation in animals.

The results obtained with cats and dogs, and later with rats, showed clearly that a very significant modification of the diabetes followed the removal of all adrenal cortical tissue. This was particularly evident in the fasting state and was comparable in degree to that observed after hypophysectomy in these species. It was later shown that A.C.T.H. exacerbated the diabetes of hypophysectomised depancreatised animals, and that adrenal cortical hormones exacerbated the diabetes of adrenalectomised depancreatised animals. It was therefore concluded that at least a part of the effects of hypophysectomy on diabetes were due to the inhibition of adrenal cortical secretion that followed the loss of A.C.T.H.

It was tempting to assume that all the effects of hypophysectomy were due to this cause, but it soon became clear that this was not so. Houssay and his colleagues, as well as the Yale laboratory, have shown that, if a crude extract of anterior pituitary is given to adrenalectomised depancreatised animals, whether maintained on sodium salts or by small doses of cortical extract, the glycosuria promptly increased. Since such animals could not increase their supply of cortical hormone, the only possible conclusion was that the anterior-pituitary extracts contained another "diabetogenic" factor that exerted its effect independently of the adrenal cortex. This second factor is now believed to be the growth hormone.

EFFECT OF GROWTH HORMONE ON CARBOHYDRATE METABOLISM

A large part of the analysis of the effects of hypophysectomy on the metabolism of fasting or in diabetes has had to await the separation and characterisation of the various anterior-pituitary hormones. Consequently it was not until fairly recently that preparations of the growth hormone, essentially free from the other anterior-lobe hormones, became available for experiments. This separation was accomplished first by Li et al. (1945) and at Yale by Wilhelmi et al. (1948). It was soon found, in confirmation of earlier work with impure preparations, that the injection of growth hormone into fed animals not only brought about a considerable retention of nitrogen (protein synthesis ?) but also, if continued, was followed by evidence of an inhibition of carbohydrate utilisation. So far it has been found that growth hormone (1) depresses the respiratory quotient of fasting hypophysectomised and fed normal rats, (2) prevents the severe loss of muscle glycogen observed in fasting hypophysectomised animals, and (3) depresses the glucose uptake of the isolated diaphragm. In addition, when given to partially depancreatised rats or to animals made diabetic with alloxan, it exacerbates the diabetes. Finally, the diabetogenic potentialities of growth hormone have been amply proved by Houssay and Anderson (1949), Cotes et al. (1949), and Campbell et al. (1950), who have all shown that the injection of 10–20 mg. of growth hormone produces permanent diabetes in dogs and cats. The production of permanent diabetes, as Young (1937) had previously shown with crude anterior-lobe extracts, is undoubtedly due to irreversible damage to the islets of Langerhans.

There is still much to be learned of the effects of growth hormone on metabolism. Since it is intimately related to one of the least understood metabolic processes, the synthesis of protein, we shall probably have to await information on these processes before a more accurate analysis of its function can be given. For example, the relation between its capacity to suppress carbohydrate

utilisation and to augment protein synthesis is signally obscure. In certain circumstances it exhibits a *hypoglycæmic* rather than a hyperglycæmic action. For instance, when growth hormone is given to fasting animals, the blood-glucose soon falls to subnormal levels, an effect that may be related to the reduction of protein katabolism, and hence to a diminution in the quantity of carbohydrate precursors. Continued injection (see above) causes a reversal of this and the appearance of hyperglycæmia. There are also still unsolved questions as to its effect on the secretion of insulin. Hypoglycæmia after the injection of growth hormone into normal fasting animals may be due to stimulation of the secretion of insulin, and the rise in the blood-glucose level of depancreatised animals may be due to their inability to secrete additional quantities of insulin.

At present we must conclude that the growth hormone in certain circumstances can diminish the utilisation of carbohydrates and hence maintain the blood-glucose level.

ADRENALINE AND CARBOHYDRATE METABOLISM

Twenty-five years ago a discussion of the endocrine factors regulating the blood-glucose level would have centred largely on insulin and adrenaline. Today the importance of adrenaline in this regard has been largely supplanted by new knowledge of the functions of the anterior-pituitary and adrenal cortical hormones. Nevertheless, adrenaline is a hormone that is rapidly released in various circumstances and accelerates the rate of glycogen breakdown both in liver and in muscles. In the liver glycogen is released to the blood-stream as glucose, whereas in the muscles it is released largely as lactic acid, which on reaching the liver is converted into glucose. The operation of this cycle enables the muscle glycogen to serve as an indirect source of blood-glucose.

Until recently the action of adrenaline on carbohydrate metabolism was believed to be limited to its capacity to make available the preformed stores of carbohydrate in liver or muscle for the maintenance of the blood-glucose level. It has, however, now been shown that adrenaline also brings about the release of A.C.T.H. from the anterior pituitary (Gershberg et al. 1950). Though the mechanism of this effect of adrenaline on the pituitary gland is not completely understood, the fact that the release of A.C.T.H. follows the release of adrenaline into the circulation is of some importance.

Perhaps the best example of the effects of this linkage between the adrenal medulla and the anterior pituitary is furnished by the response of the organism to hypoglycæmia. In this situation the immediate restoration of the blood-glucose level is essential for life.

It is well known, since the classical work of Cannon, that when the blood-glucose falls much below 50 mg. per 100 ml., adrenaline is discharged as a consequence of the irritating effect of the low blood-glucose level on the centres in the brain-stem controlling its discharge. The adrenaline entering the blood-stream not only accelerates the discharge of any preformed liver glycogen as glucose but also with equal rapidity evokes a release of A.C.T.H. from the pituitary. A.C.T.H. in turn releases additional quantities of adrenal cortical steroids, which (see above) have as one of their important metabolic effects the ability to accelerate the conversion of tissue proteins to liver glycogen. The liver glycogen formed from the breakdown products of the amino-acids is then available to augment the blood-glucose still further. In this way the rapid mechanisms and a more slowly acting mechanism for the support of the blood-glucose level are effectively linked. It seems that the ability of normal fasting animals with low liver-glycogen levels to recover spontaneously from moderate insulin hypoglycæmia is due to their capacity not only to discharge their small stores of liver glycogen but also to supply all the glucose they require for recovery by an acceleration of protein katabolism. When the blood-glucose has by such means been restored to normal levels, the activity of both the adrenal medulla and the anterior pituitary is simultaneously suppressed.

CONCLUSION

I have tried to point out that, though the blood-glucose level is the result of processes by which glucose is added to the blood and of processes by which it is utilised in the tissues, the maintenance of the blood-glucose level within the rather narrow limits of normal is a consequence of a close interaction between those metabolic processes and the secretions of certain endocrine organs, notably the pancreas, the anterior pituitary, and the adrenals.

The rate of utilisation of glucose in the tissues and hence the upper limit of the blood-glucose level are largely determined by the secretion of insulin. There is valid evidence that the secretion of insulin is increased by a rising blood-glucose level, a type of regulation that seems to be admirably adapted to deal with the sudden entry of considerable quantities of glucose into the body.

On the other hand, the maintenance of a minimal blood-glucose level is the result of a complex interplay between the secretions of the anterior pituitary, the adrenal cortical hormones, and in some instances the hormone of the adrenal medulla. This interplay maintains the blood-glucose level in three ways: (1) the discharge of adrenaline makes available any preformed liver glycogen; (2) the release of A.C.T.H. augments the secretion of the 11-oxygenated adrenal steroids, one of whose functions is to accelerate the formation of glucose from non-carbohydrate precursors; and (3) the suppression by these steroids of carbohydrate utilisation by the tissues. (In this they may be reinforced by the anterior-pituitary growth hormone or possibly by another still unidentified hormone from this gland.) Though the mechanism responsible for the stimulation of anterior-lobe function during fasting is obscure, there is little doubt of its occurrence, for in the absence of the anterior lobe of the pituitary the blood-glucose soon declines to levels incompatible with life.

For our understanding of human diabetes the contribution of this new knowledge about the rôle of the anterior pituitary and adrenal glands in the regulation of carbohydrate metabolism lies in the light it throws on the chain of events begun when the insulin-supply becomes deficient. It is not too much to hope that, as our knowledge of the basic activities of these hormones and their interrelation to each other unfolds, this will also reveal to us the reason for the widespread incidence of diabetes in man.

REFERENCES

Althausen, T. L., Stockholm, M. (1938) *Amer. J. Physiol.* **123**, 577.
Brady, R. O., Lukens, F. D. W., Gurin, S. (1951) *Science*, **113**, 413.
Brobeck, J. R., Tepperman, J., Long, C. N. H. (1943) *Yale J. Biol. Med.* **15**, 831, 893.
Campbell, J., Davidson, I. W. F., Snair, W. D., Loi, H. P. (1950) *Endocrinology*, **46**, 273.
Chernick, S. S., Chaikoff, I. L. (1951) *J. biol. Chem.* **188**, 389.
Cori, C. F. (1945–46) *Harvey Lect.* **41**, 253.
Cotes, P. M., Reid, E., Young, F. G. (1949) *Nature, Lond.* **164**, 209.
Gershberg, H., Fry, E. G., Brobeck, J. R., Long, C. N. H. (1950) *Yale J. Biol. Med.* **23**, 32.
Houssay, B. A., Anderson, E. (1949) *Endocrinology*, **45**, 627.
Lawrence, R. D. (1951) *Brit. med. J.* i, 373.
Li, C. H., Evans, H. M., Simpson, M. E. (1945) *J. biol. Chem.* **159**, 353.
Long, C. N. H., Katzin, B., Fry, E. G. (1940) *Endocrinology*, **26**, 309.
— Lukens, F. D. W. (1936) *J. exp. Med.* **63**, 465.
Russell, J. A. (1940) *Amer. J. Physiol.* **128**, 522.
Stetten, DeW. jun., Boxer, G. E. (1944) *J. biol. Chem.* **156**, 271.
Sutherland, E. W. (1950) *Recent. Progr. Hormone Res.* **5**, 441.
Wilhelmi, A. E., Fishman, J. B., Russell, J. A. (1948) *J. biol. Chem.* **176**, 735.
Young, F. G. (1937) *Lancet*, ii, 372.

A SIMPLE METHOD OF INTERNAL TOCOGRAPHY

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UTERINE contractions have the immediate effect of raising intra-uterine pressure. They cause the cervix to dilate during labour and expel the fœtus or assist in its expulsion.

A continuous record of intra-uterine pressure reflects very accurately the pattern of uterine behaviour. It offers insight into many problems attending labour and affords the solution to some. Characteristically the discovery of new facts precipitates in turn new problems. It is so with tocography (i.e., the recording of the forces concerned in childbirth).

Records of uterine behaviour are most valuable if they are accurate, sensitive, and easy to make during labour. A method is described here which fulfils these requirements very closely.

EXTERNAL AND INTERNAL TOCOGRAPHY

Many types of external tocographs have been used to detect uterine action (Dodek 1932, Fenning 1942, Woodbury et al. 1938). The method is indirect, for changes in uterine shape are detected through the abdominal wall by pneumatic, mechanical, or mechano-electrical devices. Disadvantages are that a proportion of the energy is spent in moving the parietes, and furthermore activity at one area is taken to represent the entire uterine action.

Reynolds (1949) has used external multi-channel tocodynamometers with great effect, and has shown the varying contributions made by differing parts of the uterus. His concept of a coördinated uterus with a "gradient of activity" and "fundal dominance" has sprung from this. He has shed light on the darkness of uterine inertia, and has recorded some of the defects of coördination which may cause the condition. His has certainly been the most fruitful method of external tocography.

Internal tocography has been effected largely by means of hydrostatic bags, placed within the uterus and communicating externally with measuring apparatus. Even in 1872 Schatz made useful records in this way. Much work of a similar nature has been performed by other workers (Bourne and Burn 1927, 1928, Moir 1934). Bourne and Burn (1927, 1928) used the method to investigate uterine behaviour, and to study the effects of drugs on the uterus. In these experiments a small hydrostatic bag was placed between the uterus and the fœtal membranes above the presenting part. Records were obtained from a mercury manometer which actuated a pen writing on a revolving drum.

Chassar Moir (1936), with extensive experience of internal tocography, ingeniously used the bag which Nature provides—namely, the placenta and cord of the first infant—when recording uterine behaviour during the birth of the second twin. He confessed, however, that this technique had considerable limitations. It was not usually possible to record second-stage contractions because the descending fœtal head occluded the cord. There were other inherent difficulties. Calculations and allowances for the correction of pressures were necessary. However, the method certainly overcame the criticisms against the use of a bag; for it did not introduce the risk of sepsis, nor could it be regarded as a "foreign body" liable to act as an "irritant" and "so produce abnormal uterine activity."

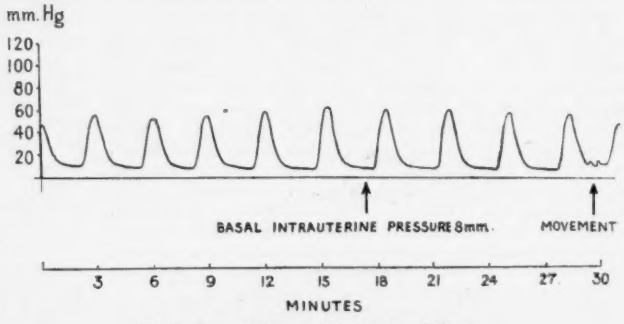

Fig. 2—Record of normal first stage of labour.

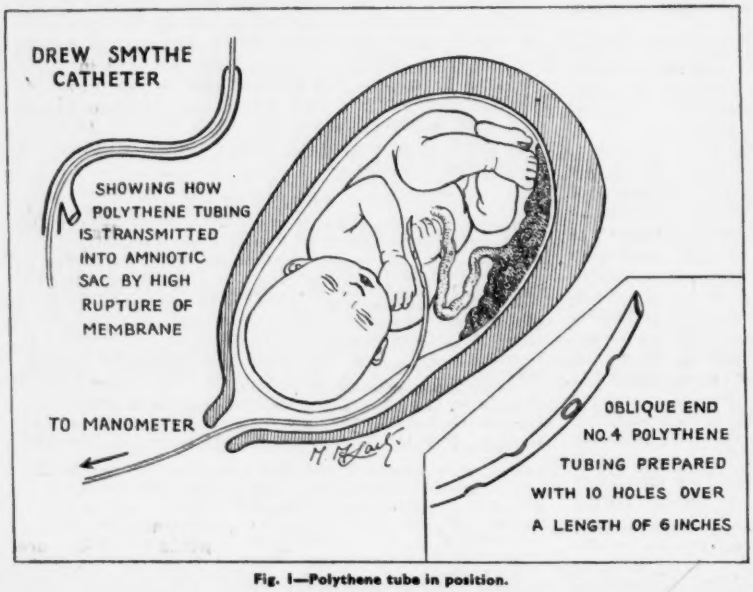
DREW SMYTHE CATHETER
SHOWING HOW POLYTHENE TUBING IS TRANSMITTED INTO AMNIOTIC SAC BY HIGH RUPTURE OF MEMBRANE
TO MANOMETER
OBLIQUE END NO. 4 POLYTHENE TUBING PREPARED WITH 10 HOLES OVER A LENGTH OF 6 INCHES

Fig. 1—Polythene tube in position.

Alvarez and Caldeyro (1950) passed a hollow needle through the abdominal wall, peritoneal cavity, and uterus into the amniotic sac. Liquor filled the needle, which was then connected to a measuring apparatus. In this way intra-uterine pressure could be measured directly. For obvious reasons recording had to be discontinued before the entire birth was completed. They mentioned the possibility of striking the placenta, and emphasised the need to compress the puncture site after withdrawing the needle in order to prevent leakage of liquor into the

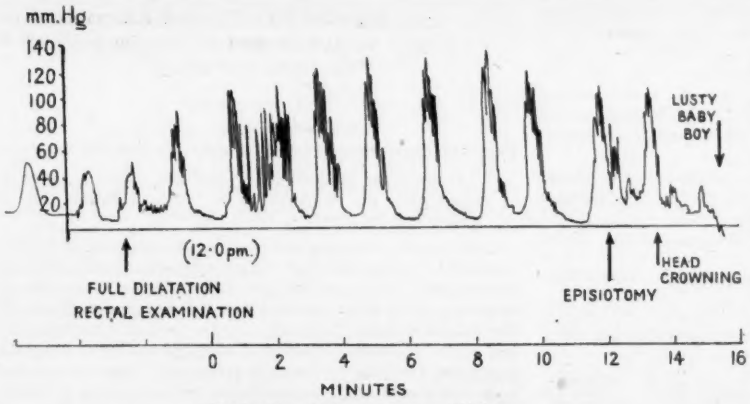

Fig. 3—Record of second stage of labour.

peritoneal cavity. They claimed that there was no morbidity among the patients whose labours were recorded in this way. We have personal knowledge, however, of one patient who died of complications following the formation of a uterine hæmatoma at the puncture site after transabdominal paracentesis for the relief of hydramnios. In the area department at Oxford blind puncture is regarded as hazardous, and the practice is to gain access through the cervix and to remove liquor by high rupture of the membranes if the patient is so distressed that intervention is necessary.

THE OXFORD METHOD

A no. 4 'Polythene' tube* 2 metres long is prepared so that its end is cut obliquely. The adjacent 6 in. of tube is perforated repeatedly, so that each hole is about equal in size to the cross-section of the tube. The tube is introduced into the amniotic sac through a Drew Smythe catheter,† kept in situ after it has effected high rupture of the fœtal membranes. The catheter is withdrawn and the tube left in position (fig. 1).

The tube fills with liquor and can be connected to a mercury manometer, so arranged that its meniscus is at the level of the patient's symphysis pubis. In effect the amniotic sac is being used as a balloon which completely fills the uterus and which remains in position until the birth is completed.

Polythene is smooth and causes no discomfort, and the patient is unaware of its presence. It resists compression and does not become occluded by the presenting part as it descends the birth canal.

* Polythene tubing was supplied by Messrs. Allen & Hanburys Ltd.; and it was sterilised according to their recommendations. The perforations in the tube are best made with a scalpel or razor-blade guarded with adhesive strapping, leaving only a small edge exposed; this prevents cutting too deeply.

† The end of the catheter was "bored out" until it was wide enough to take the tube comfortably.

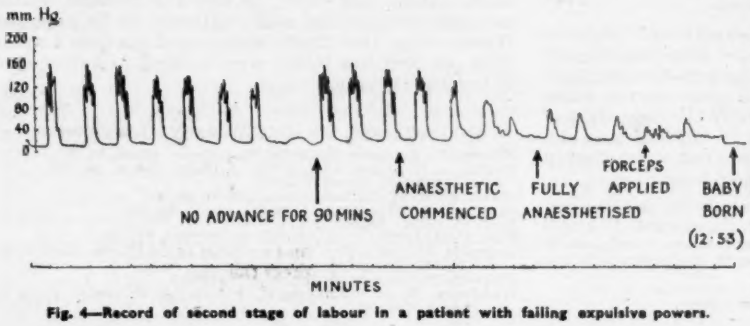

Fig. 4—Record of second stage of labour in a patient with failing expulsive powers.

The great advantage of this method is that records can be made until the birth is completed. The length of tube enables the patient to lie comfortably in bed, sit, or move freely, without interfering with the record. 4 ml. of liquor completely fills the tube, and the passage of a further 3 ml. along it causes the manometer to move through its greatest range. The method has been found very reliable in practice. It has been suggested that it may cause intra-uterine sepsis; but in 36 cases which we have studied, some for as long as forty-eight hours, there has been no morbidity.

Although originally designed to study uterine action after high rupture of the membranes, the method has been used successfully after low rupture or after the membranes have ruptured spontaneously. The presenting part occludes the cervix like a ball-valve; and though a trickle of liquor may escape this does not interfere with the record, which is a true reflection of intra-uterine pressure.

Simple measurements of intra-uterine pressure can be made by introducing the tube into the amniotic sac and supporting the external portion vertically. Liquor rises in the tube, and pressures can be measured in "centimetres of liquor." The specific gravity of liquor is about 1002, so that the height of a column of liquor is about 13 times the height of an equivalent column of mercury. It has been the custom to measure from the level of the symphisis pubis so that comparisons could be made from patient to patient.

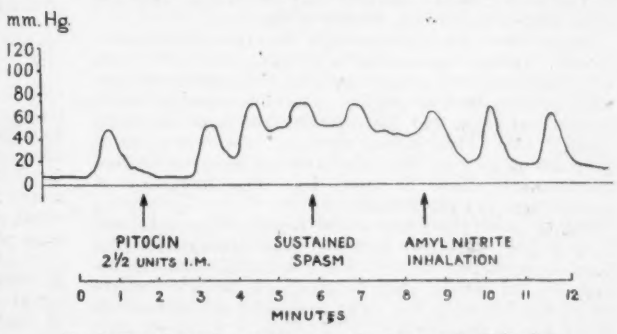

Fig. 5—Record showing uterine spasm due to oxytocin ('Pitocin').

The basal intra-uterine pressure is on average about 10–12 cm. of liquor, equivalent to 8 mm. Hg. During first-stage contractions it rises to 50, 95, or even 120 cm. of liquor, equivalent to 40, 70, or 90 mm. Hg. During the second stage with strong expulsive efforts the intra-uterine pressure may rise to 240 cm. of liquor, equivalent to 180 mm. Hg.

This very simple technique is probably the most accurate available for the study of intra-uterine pressure (Reynolds 1951). It measures pressures directly, and there are no mechanical adjustments or extraneous pressure factors for which correction need be made.

Measurement with a manometer and revolving drum offers the advantage of a permanent record. Under these conditions the basal intra-uterine pressure is about 8 mm. Hg. First-stage contractions cause rises in pressure up to 40 or even 70–90 mm. Hg, and second-stage contractions up to 120–140 mm. Hg. The highest value recorded has been 180 mm. Hg when expulsive effort was maximal.

For comparison typical values obtained by three methods are given in the accompanying table. The results from the method described here agree closely with those from the method of Alvarey and Caldeyro (1950). Both

INTRA-UTERINE PRESSURE MEASURED BY THREE DIFFERENT METHODS

Method	Intra-uterine pressure (mm. Hg)		
	Basal	First-stage contractions	Second-stage contractions
Chassar Moir (1936)	15	60	105
Alvarey and Caldeyro (1950)..	8	35–100	100–180
Williams and Stallworthy (1952)	8	40–90	120–180

methods depend on similar direct hydrostatic principles, and their accuracy derives from their simplicity.

EXAMPLES OF RECORDS

The utility of the method may be judged from the reproductions of typical records in figs. 2–5.

Fig. 2 shows the characteristics of normal first stage of labour. The contractions are typically equal in intensity and duration, and occur regularly. Systole is abrupt, and the pressure rises quickly. The climax is maintained for a short time, and the pressure falls more gradually than it rose. The record shows a basal intra-uterine pressure of 10 mm. Hg. The average intensity of contractions is about 60 mm. Hg. The frequency of contractions is 4 per 10 min.

Fig. 3 shows the whole of the second stage of labour, in a patient who had had one baby previously. The basal intra-uterine pressure was 8 mm. Hg. The average intensity of second-stage contractions plus expulsive effort was 130 mm. Hg. The frequency of contractions was 6 per 10 min.

Fig. 4 is taken from the record of a patient, who had already had one baby, whose labour was terminated by forceps after a delay of 90 min. in the second stage due to a persistent occipitoposterior position. Her powers were beginning to fail. The effect of the anæsthetic was to eliminate second-stage expulsive effort. The record is continued until delivery was completed.

Fig. 5 is a small section from the record of a patient who had uterine spasm from injection of oxytocin ('Pitocin'). The spasm quickly relaxed after the administration of amyl nitrite.

FURTHER STUDIES

Work now in progress is concerned with some problems of inertia; and with intra-uterine pressures in pre-eclampsia, in hydramnios, and in accidental hæmorrhage. The effect of certain drugs on the uterus is also being investigated, and it is hoped to study the circulation of liquor amnii. The Royal College of Obstetricians and Gynæcologists have awarded a Leverhulme scholarship to encourage further work along these lines.

It is a pleasure to thank all who have helped in this work, especially the staff of the maternity department, Churchill Hospital, Oxford. Prof. J. H. Burn, F.R.S., very kindly loaned the recording apparatus. Miss M. McLarty made the drawings.

References at foot of next column

NEONATAL SURGERY

EARLY TREATMENT OF CONGENITAL MALFORMATIONS

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> "If surgeons take sufficient interest in the surgery of early life . . . the advance in the near future can be unpredictably great."—W. E. LADD.

THIS paper attempts to ascertain the number of babies born with conditions which menace life during the neonatal period and which are at least theoretically amenable to surgery. The area covered by the Liverpool Regional Hospital Board has been taken as the field of investigation, and all babies born with urgent surgical conditions during the year 1949 have been considered. This series has been compared with a somewhat similar group of cases admitted to the Hospital for Sick Children, Great Ormond Street, London, in the same year.

The Ministry of Health report on neonatal mortality and morbidity states:

> "Our knowledge of the causes of neonatal death is incomplete, and the prevention and treatment of some forms of neonatal illness are far from satisfactory. . . . These subjects offer great scope for research. Many can play a part in this work; pædiatricians, obstetricians, anæsthetists, physiologists, and social workers" (Ministry of Health 1949).

The surgeon might well have been included in this team of workers.

NEONATAL MORTALITY-RATE IN ENGLAND AND WALES

There has been a steady fall in the neonatal mortality-rate for England and Wales within the last forty years (table 1). Between 1906 and 1910 the figure was 40 per 1000 live births; by 1949 it had dropped to 19·31 per 1000 live births. This remarkable improvement can be attributed to many factors: the rise in the general social status of the population, improved antenatal and post-natal supervision, and the development of pædiatrics have all played a part.

In 1949 there were 730,518 live births in England and Wales (table 1) and 14,106 deaths in the neonatal period (19·31 per 1000 live births). The most important cause of death was *prematurity*, which accounted for 5420 infants (7·40 per 1000 live births). As a result of improved antenatal care and obstetric technique the incidence of prematurity is steadily falling, and advances in pædiatrics have improved the chances of survival of premature babies.

Asphyxia, with 2377 deaths (3·25 per 1000 live births), was the next most important cause of neonatal mortality.

In 1943, Potter and Adair stated that in the U.S.A. *congenital abnormalities* occupied third place as a cause of neonatal deaths. In the Liverpool Maternity Hospital, during the ten-year period 1938–47 inclusive, 2·05% of the 20,479 live births were associated with congenital malformation, and 12·6% of the 475 neonatal deaths were due to congenital malformations. In England and Wales, during 1949, 2056 children aged less than 4 weeks (2·81 per 1000 live births) were certified as having died of congenital malformations.

MR. WILLIAMS, MR. STALLWORTHY: REFERENCES

Alvarey H., Caldeyro, R. (1950) *Surg. Gynec. Obstet.* **91**, 1.
Bourne A. W., Burn, J. H. (1927) *J. Obstet. Gynæc.* **34**, 249.
— — (1928) *Lancet*, ii, 694.
Dodek, S. M. (1932) *Surg. Gynec. Obstet.* **55**, 45.
Fenning, C. (1942) *Amer. J. Obstet. Gynec.* **43**, 791.
Moir, C. (1936) *Lancet*, i, 414.
Moir, C. H. (1934) *Trans. Edinb. obstetr. Soc.* **91**, 93.
Reynolds, S. R. M. (1949) The Physiology of the Uterus. New York.
— (1951) Personal communication.
Shatz (1872) Cited by Dodek, S. M. (1932).
Woodbury, R. A., Hamilton, W. F., Torpin, R. (1938) *Amer. J. Physiol.* **121**, 640.

Deaths due to Congenital Malformations

Though the general neonatal mortality-rate has fallen in the last fifty years, the death-rate due to congenital malformations has remained almost stationary. This cause of death has therefore increased relatively in importance, and in 1949 14·58% of all neonatal deaths were due to congenital malformations. Gaisford (1948) has commented that the fall in the neonatal mortality-rate has been less than that of the infant mortality-rate in the last thirty-five years, and that this can be partly explained by the number of unpreventable deaths due to congenital malformations. In my opinion many of these deaths are not unpreventable.

Medical investigators have differed widely in their estimation of the proportion of deaths due to congenital abnormalities in the neonatal period. The figures vary between 11% (Dobbs 1943) and 20·4% (Allen et al. 1943). The Ministry of Health (1949) points out that the figures published by the Registrar of Births and Deaths cannot be accepted unconditionally, since in most cases the cause of death was not verified by necropsy. Even necropsy may fail to reveal the true cause of death; for instance, it is notoriously easy to overlook an œsophagotracheal fistula at necropsy (Belsey and Donnison 1950). The Ministry of Health (1949) therefore suggests that a figure of 5 neonatal deaths due to congenital abnormalities per 1000 live births is likely to be

TABLE I—VITAL STATISTICS IN 1949

—	England and Wales	Liverpool region
Population ..	43,785,000	2,113,353
Total live births ..	730,518 (16·7 per 1000 population)	41,127 (19·4 per 1000 population)
Neonatal deaths ..	14,106 (19·31 per 1000 live births)	809 (19·7 per 1000 live births)
Neonatal deaths due to prematurity	5420 (7·40 per 1000 live births)	347 (8·44 per 1000 live births)
Neonatal deaths due to congenital malformations	2056 (2·8 per 1000 live births, and *14·58%* of all neonatal deaths)	133 (3·23 per 1000 live births, and *16·44%* of all neonatal deaths)

near the truth. Should the over-all neonatal mortality-rate drop to 10 per 1000, which is theoretically possible (some of the Scandinavian countries are approaching this figure), 50% of all neonatal deaths would then be due to congenital malformations, provided that the death-rate due to congenital abnormalities remains unchanged. Almost all reports on neonatal mortality refer to congenital malformations as the hard core of the problem and state that little can be done to lessen them. I challenge this pessimistic attitude.

I do not suggest that the lives of all babies born with congenital abnormalities can be saved by even the most skilful surgery. Severe degrees of spina bifida must be regarded as untreatable, and certain congenital heart lesions are at present fatal shortly after birth. In view of the astonishing advances in cardiac surgery, however, it seems possible that surgery may have something to offer to these patients in the not too distant future.

NEONATAL SURGERY AND MORTALITY IN THE LIVERPOOL REGION

The area covered by the Liverpool Regional Hospital Board and the United Liverpool Hospitals is very suitable for this survey because it is compact and has a population large enough to be of statistical value (2,113,353 in 1949). The last available complete set of figures were those for 1949; these were studied in detail. There are twenty-four hospitals with children's wards in the region, and fourteen hospitals had admitted newborn babies with urgent surgical conditions in 1949. In addition, the neonatal records of eleven county and borough medical officers of health were scrutinised, because the hospital records did not cover all the relevant cases.

TABLE II—NEONATAL SURGICAL CASES IN 1949

—	Liverpool	Great Ormond Street
No. of cases ..	75	60
No. of deaths ..	54 (*72%*)	29 (*48·3%*)
Boys	43 (*57·3%*)	39 (*65%*)
Girls	32 (*42·7%*)	21 (*35%*)
No. of cases operated on	54 (*72%* of total) with 33 deaths (*61·1%* operative mortality)	58 (*96·6%* of total) with 27 deaths (*46·5%* operative mortality)
No. of cases not operated on	21, all died	2, both died
No. premature ..	31 (*41·3%* of total) with 25 deaths (*80·6%* mortality)	10 (*16·6%* of total) with 7 deaths (*70%* mortality)

In 1949 there were 41,127 live births in the Liverpool region (table I); 809 children (19·7 per 1000 live births) died in the neonatal period; and congenital malformations accounted for 133 (16·44%) deaths. Of these 133 deaths 54 (40·6%) were due to conditions amenable to surgery. If the proportion for the country as a whole was the same, it is reasonable to assume that between 32 and 48% of the 2056 deaths due to congenital malformations in England and Wales would have profited by surgical treatment. The size of the problem is therefore not insignificant, since it concerned the lives of 650–980 children born in England and Wales in 1949.

MATERIAL COLLECTED IN THE LIVERPOOL REGION

In this investigation certain conditions, in spite of their being congenital, were excluded, because, although surgery will ultimately be required, operation is not called for in the neonatal period. Among those conditions were hare-lip and cleft-palate, orthopædic, and genital malformations; spina bifida can rarely be benefited by operation soon after birth. So-called congenital hypertrophic pyloric stenosis is excluded because its present treatment is usually satisfactory.

The conditions included in the group of neonatal surgical cases are mostly malformations of the alimentary tract requiring urgent surgery soon after birth. In the Liverpool area 75 such cases were collected (table II). The diagnosis was confirmed in each of these 75 babies either at operation or necropsy. Of these 75 babies 54 (72%) died: 21 were not operated on and all died; and of 54 operated on 33 (61%) died. Therefore the high mortality-rate (72%) is partly explained by the fact that 21 children were denied surgery owing to failure to diagnose or to their being admitted moribund.

It is well known that there is an association between prematurity and congenital malformations. In Miller's (1950) series congenital defects were observed in 4·4%

TABLE III—DETAILS OF COLLECTED MATERIAL

Lesion	Liverpool		Great Ormond Street	
	No. of cases	No. of deaths	No. of cases	No. of deaths
Intra-abdominal	23 (*30·6%*)	18 (*78·3%*)	14 (*23·3%*)	9 (*64·3%*)
Œsophageal atresia ..	8 (*10·7%*)	6 (*75·0%*)	8 (*13·3%*)	7 (*87·5%*)
Imperforate anus.. ..	8 (*10·7%*)	3 (*37·5%*)	11 (*18·3%*)	1 (*9·1%*)
Exomphalos ..	7 (*9·3%*)	6 (*85·7%*)	7 (*11·7%*)	3 (*42·8%*)
Obstructive jaundice ..	6 (*8·0%*)	5 (*83·3%*)	7 (*11·7%*)	4 (*57·1%*)
Diaphragmatic hernia ..	4 (*5·3%*)	3 (*75·0%*)	2 (*3·3%*)	..
Spina bifida (urgent cases only) ..	7 (*9·3%*)	4 (*57·1%*)	2 (*3·3%*)	2 (*100·0%*)
Genito-urinary ..	2 (*2·6%*)	2 (*100·0%*)	4 (*6·7%*)	2 (*50·0%*)
Suppurative parotitis ..	2 (*2·6%*)	1 (*50·0%*)	1 (*1·7%*)	..
Miscellaneous..	8* (*10·7%*)	5 (*62·5%*)	3† (*6·7%*)	1 (*25·0%*)

* 3 cases of micrognathia (2 deaths); 2 urgent orthopædic lesions (2 deaths); 1 suppurating ethmoid (1 death); 1 lax œsophagus; and 1 empyema.

† 2 urgent orthopædic lesions; 1 goitre (1 death); and 1 cystic hygroma.

of all premature babies, the comparable figure for full-term babies being 1·3%. In my series 41·3% of the babies with surgical conditions were also premature. This may be another reason for the high mortality-rate in the region, but prematurity per se is no contra-indication to surgery. The smallest baby surviving operation in this series weighed just over 2 lb.

The details of the 75 cases are shown in table III. It is impossible to give here a detailed account of the treatment for the different neonatal surgical conditions, but the more important malformations and other anomalies are briefly discussed below.

Intra-abdominal Lesions (23 cases)

These lesions comprise the largest group: 23 cases (30·6% of the total). All the 9 babies who received no surgical treatment died; and of the 14 who were operated on 5 recovered. In intestinal obstruction of the newborn the technical difficulties at operation, although formidable, are small compared with the difficulties encountered in preoperative and postoperative management. The problems of intestinal decompression and control of the blood chemistry are little understood. There is the constant danger of inhalation pneumonia due to aspiration of vomit. This danger is increased by general anæsthesia; therefore the passing of an endotracheal tube and packing of the pharynx is always advisable (Rees 1950). Only 2 children in this series were operated on under local anæsthesia, and both died. These cases of intra-abdominal abnormality were classified as follows:

(1) *Duodenal Atresia* (5 cases).—One child was not operated on; of 2 who underwent gastrojejunostomy 1 survived, and of 2 who underwent duodenojejunostomy 1 survived. This condition is perhaps the most common type of intestinal atresia in the newborn; it was described in detail by Ladd and Gross (1941) in America and by Forshall (1947) in this country. Current American reports show that, given the best facilities, the mortality should be low (10% in the 10 cases of Grove and Rasmussen 1950).

(2) *Intrinsic Obstruction of Small Intestine* (3 cases).—All these babies died. Side-to-side anastomosis was done in each case. All these babies came too late for successful operation, and a considerable length of non-viable gut had to be excised. Other malformations were also present in each case. Intrinsic obstruction of the small intestine distal to the duodenum is the most fatal of the gastro-intestinal malformations, but numerous recoveries have been published. Ladd and Gross (1941) reported a mortality-rate of 73%, and Glover and Barry (1950) one of 75%.

(3) *Extrinsic Obstruction of Small Intestine* (7 cases).—Of 4 babies operated on only 1 recovered. These results are very unsatisfactory because the prognosis in this condition distal to the duodenum is quite hopeful. 75% of the patients reported by Glover and Barry (1950) survived.

(4) *Neonatal Peritonitis* (5 cases).—This condition is seldom recorded, but cases have been published from time to time since Simpson's original paper (1838). No doubt this condition is much more common than has been suspected in the past. Most cases are diagnosed as gastro-enteritis or septicæmia and, unless there is a necropsy, the true state of affairs may not be discovered. Peritonitis can, of course, occur secondarily to gastro-enteritis, but in all the cases reported here the peritonitis was secondary to perforation of the intestine with or without mechanical intestinal obstruction. Of the 5 Liverpool cases 4 were not diagnosed before necropsy. One child was thought to have intestinal obstruction, was operated on, and recovered. A considerable number of recoveries have been reported from America (Low et al. 1949, Neuhauser 1944). No improvement can be expected in the present high mortality unless this condition is diagnosed earlier so that surgical treatment can be given speedily.

(5) *Meconium Ileus* (1 case).—This is due to cystic fibrosis of the pancreas and has recently received much attention. There have been very few recoveries in this country, but in America several surgeons have reported a high survival-rate; Hiatt operated on 8 cases and 5 survived (Hiatt and Wilson 1948). It is surprising that there was only 1 baby with meconium ileus in the Liverpool cases; he died after operation. In spite of a considerable amount of research, the pathology of this condition is not yet clearly understood, and further biochemical and pathological study will be needed before we can hope to lower the high mortality.

(6) *Hirschsprung's Disease* (1 case).—This child had the long-segment type of this condition and died soon after operation. This variation of Hirschsprung's disease, which has only recently been recognised, has a very high mortality (Zuelzer and Wilson 1948, Bodian et al. 1951, Forshall et al. 1951). Swenson (1950), however, reports some recoveries in children on whom he did an ileostomy. This condition is probably not uncommon. Few reports have been published, but surgeons will naturally be reluctant to report cases with apparent neonatal intestinal obstruction where no mechanical block is found at operation. Only serial microscopical sections of the gut will clinch the diagnosis (Rickham 1950c).

(7) *Strangulated Hernia* (1 case).—This is rare in the neonatal period. The only case in the present series had all the signs of intestinal obstruction with gross distension and fæculent vomiting for three days, during which time the baby was treated for "gastro-enteritis." Recovery followed operation.

Œsophageal Atresia (8 cases)

It is now thought that œsophageal atresia is at least as common as imperforate anus. Of the 8 babies 6 were operated on, and 2 of these survived. There was a high incidence of multiple deformities in this group (table IV),

TABLE IV—MULTIPLE MALFORMATIONS IN 16 (22·7%) OF THE LIVERPOOL SERIES

2	Exomphalos and volvulus
1	,, and microcolon
1	,, and diaphragmatic hernia
1	Œsophageal atresia and anal atresia
1	,, ,, and Fallot's tetralogy
1	,, ,, and patent intraventricular septum
1	,, ,, and agenesis of one lung
1	,, ,, and acrocephaly-syndactyly
1	Imperforate anus and hypospadias
1	,, ,, and epispadias
1	,, ,, and hydronephrosis
1	Volvulus and duodenal atresia
1	,, and anal stricture
1	,, and micrognathia
1	Diaphragmatic hernia and Klippel-Feil syndrome

including imperforate anus, agenesis of the lung, and Fallot's tetralogy. This incidence of associated malformations in 1949 was very high, and no similar incidence has been recorded before or after. This, to some extent, explains the high mortality. American surgeons report high recovery-rates; Swenson (1950) had 75 cases with only 18 postoperative deaths. There have been several reports of success in this country (Franklin 1947, Rickham 1950a, Belsey and Donnison 1950). All the 8 babies in this group had been fed, sometimes repeatedly, before the condition was suspected. This is lamentable because the danger of causing inhalation bronchopneumonia by giving a feed is very great.

Imperforate Anus (8 cases)

This is one of the most common gastro-intestinal malformations. There are two types:

(1) *Low Rectal Atresia* (4 cases).—Of these 4 babies 2 had a perineal fistula, called ectopic anus by Browne (1951a), and 1 a low rectovaginal fistula. All 4 recovered after operation, but 1 died later of uræmia secondary to bladder-neck obstruction. It is commonly taught that the treatment of imperforate anus is a comparatively minor operation. This is true only for cases of low rectal atresia.

(2) *High Rectal Atresia* (4 cases).—This is perhaps the most difficult neonatal surgical problem. Of the 4 babies with high rectal atresia 3 underwent colostomy, and 1 of these died of intestinal obstruction. In 1 case the approach was through the perineum; this child survived, but the final result was unsatisfactory. Permanent colostomies in newborn babies are undesirable, and it is hoped that a better method of treating these unfortunate children will be found. It remains to be seen whether the recent technique of a "pull-through" operation will solve the problem. Although the operative mortality-rate should be under 10%—Mayo and Rice (1950) report 165 cases with 15 deaths—the final results in this condition are at present far from satisfactory.

Exomphalos (7 cases)

Of the 7 babies with exomphalos 6 died. This very high mortality is disturbing, but it must be added that 4 babies had severe associated abnormalities: 2 had an

associated volvulus of the small intestine; 1 had an undiagnosed diaphragmatic hernia; and 1 died after operation from intestinal obstruction due to a microcolon of unknown origin (? Hirschsprung's disease). These results leave much to be desired. Ladd and Gross (1941) had a 75% postoperative survival-rate from exomphalos of less than 8 cm. in diameter, and Gross (1948) and Gross and Clatworthy (1950) have shown that, with improved technique, babies with exomphalos over 9 cm. in diameter may be saved.

Obstructive Jaundice (6 cases)

Jaundice due to congenital obstruction of the bile passages was observed at birth in 1 case, and on the 2nd, 4th, 6th, 14th, and 16th day in the others. Laparotomy was performed on 5 babies but was successful in only 1; the other 4 babies died before the age of six months. Unfortunately, in many of these cases the obstruction is intrahepatic, a condition not amenable to surgery at present. However, the recent development of the operation of intrahepatic cholangiojejunostomy by Longmire and Sanford (1948, 1949) has made the outlook more hopeful. It is not generally realised that, once the condition has been diagnosed, the baby should be operated on without delay, because continued obstruction leads to hepatic cirrhosis. Ladd and Gross (1941) had 45 cases: in only 9 was operative repair possible, and 6 of these babies survived; and in 6 further cases the block was due to inspissated mucus and 5 of these babies survived.

Diaphragmatic Hernia (4 cases)

Diaphragmatic hernia and eventration are comparatively common malformations, but the condition is not usually severe enough to endanger life shortly after birth. Of these 4 babies 2 were operated on, and 1 of them survived; the 3 others died. Numerous reports have been published in America (Ladd 1940) of successful operations on newborn infants with this condition.

Spina Bifida (7 cases)

Browne (1949) has stated that operation for meningocele or myelomeningocele is seldom justifiable in the neonatal period. The figures in this report tend to confirm this view; 7 babies with spina bifida were operated on shortly after birth and are therefore included in this survey. In 2 cases the operation was undertaken because the sac had ruptured. The results were not encouraging: there were 4 postoperative deaths (1 due to shock, 1 to paralytic ileus, and 2 to meningitis), and of the 3 babies who survived 2 developed hydrocephalus soon after operation. These figures support Norman's (1949) emphatic advice against operation during the first twelve months of life. Some American surgeons, however, notably Ingraham and Bailey (1946), Campbell (1948), and Kredel (1950), seem to have had successes in the neonatal period.

Genito-urinary Lesions (2 cases)

Certain genito-urinary malformations sometimes give rise to urgent symptoms in the neonatal period (bladder-neck obstruction, hydronephrosis, pyonephrosis, &c.), and the mortality-rate is high. In the Liverpool series there was 1 child with bladder-neck obstruction and 1 with pyonephrosis; both were diagnosed at necropsy. It is my impression that gross urinary malformations are not uncommon, but are seldom recognised during life. Reports from America (Campbell 1938, 1941, Gross and Clatworthy 1950) show that many of these babies can be saved.

Suppurative Parotitis (2 cases)

This condition is not rare in the neonatal period. Unless it is promptly diagnosed and treated by chemotherapy and surgery, there is great danger of septicæmia; 1 of the babies died of this condition. Sanford and Shmigelsky (1945), in America, have reported very successful results.

Miscellaneous Conditions (8 cases)

Only two conditions grouped under this heading are discussed here:

(1) *Micrognathia* (3 cases).—Severe degrees of micrognathia associated with cleft palate are usually fatal. Death is due either to suffocation resulting from difficulty in sucking or to aspiration pneumonia. Of the 3 babies 2 were treated medically and died, and 1 was operated on to keep the tongue and mandible forward and survived. Much work relating to emergency operations for this condition has been done in America, and successes are reported by Douglas (1946) and Longmire and Sanford (1948, 1949).

(2) *Lax Œsophagus* (1 case).—Although there was only one case in 1949, our experience since 1949 with careful radioscopy of infants with vomiting of obscure cause has convinced us that this condition is not at all uncommon. The pathology and symptoms of lax œsophagus and the allied condition of short œsophagus are not yet fully understood, and it is too early to discuss the rôle of surgery in treating this condition during the neonatal period. Very good results with early surgery have been reported by Thomsen and Wamberg (1950) and others.

DIAGNOSIS

If the mortality-rate due to congenital malformations is to be lowered, correct early diagnosis is of the utmost importance, for the mortality-rate in urgent neonatal surgical conditions like œsophageal atresia and intestinal obstruction rises in direct ratio to the delay in operating. Table v shows quite clearly that the mortality-rate in both series rises steeply with every day of age of the baby and that, if the delay is more than three days, the mortality-rate approaches 100%. Table vi shows the presenting signs encountered in this investigation.

TABLE V—AGE-INCIDENCE AT OPERATION ON URGENT CASES ONLY

Age (hr.)	Liverpool		Great Ormond Street	
	No. of cases	No. of deaths	No. of cases	No. of deaths
24 or less ..	14	7 (*50%*)	11	4 (*36%*)
24–48	6	5 (*83%*)	7	4 (*57%*)
48–72	5	4 (*80%*)	8	6 (*75%*)
72–96	2	2 (*100%*)	2	2 (*100%*)
96–120	3	2 (*67%*)	2	2 (*100%*)
120–144	1	1 (*100%*)	1	1 (*100%*)
Over 144 ..	2	2 (*100%*)	3	3 (*100%*)
Total ..	33	..	34	..

Visible Deformities

Of the 75 babies 28 presented with a visible deformity. Apart from obvious deformities—e.g., exomphalos, micrognathia, and spina bifida—there are conditions in which routine inspection should reveal the abnormality. Imperforate anus is not infrequently overlooked for one or two days, and there was a typical strangulated inguinal hernia which was not recognised until the baby had been vomiting for three days.

Vomiting

Vomiting may occur either as a symptom of disease or deformity or, more commonly, in association with some difficulty in feeding. It is often the result of unwise

TABLE VI—PRESENTING SIGNS

Sign	Liverpool	Great Ormond Street
Visible deformity	28 (*37·3%*)	19 (*31·7%*)
Vomiting and distension	13 (*17·3%*)	12 (*20·0%*)
Vomiting and peristalsis	4 (*5·3%*)	1 (*1·7%*)
Vomiting only	6 (*8·0%*)	1 (*1·7%*)
Distension only	1 (*1·3%*)	2 (*3·3%*)
Distension and constipation ..	1 (*1·3%*)	6 (*10·0%*)
Distension and urinary retention ..	..	1 (*1·7%*)
Cyanosis and dyspnœa	6 (*8·0%*)	3 (*5·0%*)
Spluttering of mucus	8 (*10·7%*)	8 (*13·3%*)
Jaundice	7 (*9·3%*)	7 (*11·7%*)
Convulsions	1 (*1·3%*)	..

efforts to force food on a newborn infant or of overfeeding or too rapid feeding.

Vomiting is a common manifestation of head injury due to birth trauma and occurs fairly constantly in the early stages of infections—e.g., coryza, pneumonia, pyelitis, and septicæmia—and especially in medical diseases of the gastro-intestinal tract. It was noted in 23 of the 75 babies. Usually the higher the lesion the earlier the vomiting. In œsophageal atresia the food will be returned immediately and swallowing will be accompanied by spluttering, coughing, and cyanosis. As already stated, these cases should not be diagnosed by the events resulting from offering a feed. In the grosser types of diaphragmatic hernia vomiting is usual but is overshadowed by signs of respiratory embarrassment.

Vomiting occurs in duodenal obstruction within the first forty-eight hours of life and is usually projectile. In 4 out of 5 cases the vomitus will contain bile—i.e., the obstruction is distal to the bile papilla. Even if these children are not fed, they will vomit bile in large amounts.

In small-bowel obstruction—e.g., atresia and volvulus—vomiting is usually the presenting symptom. The earlier vomit may consist of milk only, but soon the vomit will contain bile and later it will be fæculent.

Vomiting comes on later in cases of large-bowel obstruction and of imperforate anus but becomes persistent. It is an important symptom in peritonitis and intraperitoneal hæmorrhage.

In all the conditions described above the vomit may be stained with blood.

It is surprising how often these babies inhale their vomit and die of asphyxia or aspiration pneumonia without any previous recorded history of vomiting. It is quite likely that some of the many neonatal deaths reported as being due to asphyxia would have shown at necropsy an underlying surgical condition.

Abdominal Distension

Distension is the second most common symptom in babies with surgical lesions of the gastro-intestinal tract, but it must not be forgotten that medical conditions—e.g., mismanagement of feeding, and gastro-enteritis—give rise to considerable abdominal distension. In 15 of the cases distension was a presenting sign.

Distension is slight in duodenal obstructions and then occurs only in the epigastric region; it is often overlooked. The lower the lesion in the intestinal tract the greater is the distension. In lesions of the lower ileum, large bowel, and anus it may be extreme: the skin becomes stretched and shiny, and the abdomen appears to be in imminent danger of bursting. In babies abdominal distension due to intestinal obstruction develops much more rapidly than in adults and soon interferes with respiration. The breathing becomes rapid and shallow and there is dyspnœa, sometimes with cyanosis.

Visible Peristalsis

Peristalsis was observed in 4 cases. In duodenal atresia typical epigastric peristalsis may be seen, as in pyloric stenosis. Intestinal peristalsis was not often noted in the present series, which is surprising, because the abdominal wall in these babies is thin and the abdominal musculature poorly developed. Possibly the rapidly developing distension soon causes paralysis of the intestinal muscles.

Constipation

Absolute constipation is very uncommon as a presenting sign, except of course in anal atresia. Even in low intestinal obstructions it is common for one or more small meconium stools to be passed; and, unless this fact is realised, there may be fatal delay in diagnosis. Staining the meconium for epithelial cells and lanugo hairs—Farber's (1933) test—may be a useful laboratory aid to the diagnosis. In Hirschsprung's disease, especially if it is of the long-segment type, constipation exists from birth, small hard stools being passed. The 1 case of distension and constipation in the present series was an example of Hirschsprung's disease.

Spluttering and Regurgitation of Mucus

It is important to impress on all those dealing with newborn infants that the baby whose mouth keeps filling with mucus and saliva, even after the air-passages have been properly cleared with a mucus catheter, must be considered to have an œsophagotracheal fistula until the diagnosis has been disproved by the passage of a catheter into the stomach. There may or may not be attacks of cyanosis. If a catheter will not pass into the stomach, the infant should be assumed to have œsophageal atresia, and be forthwith transferred to a centre for operation. This symptom complex was present in all 8 cases of œsophagotracheal fistula in the present series.

Cyanosis

When persistent or present from birth, cyanosis is likely to be due to atelectasis, congenital heart lesion, or head injury. It is also an important sign of certain surgical lesions. In œsophageal atresia secretion accumulates in the pharynx and blind œsophageal pouch and overflows into the air-passages. Cyanosis is aggravated by trying to feed the baby. In these cases cyanosis can be reduced by keeping the pharynx clear of mucus by repeated aspiration. Cyanosis is seen in cases of large diaphragmatic hernia or extensive diaphragmatic eventration in which the lung tissue is compressed by the abdominal contents displaced into the chest. It is increased when the infant cries or is fed.

As already mentioned, cyanosis may be the only outward sign when a child aspirates its vomit.

Surprisingly, in the present series there were only 6 cases in which cyanosis was noticed before any other sign.

Jaundice

Jaundice is the main sign of obstruction of the bile passages, and all 7 babies suffering from this condition showed it to a marked degree. It is classically accompanied by the passage of clay-coloured stools and dark-brown urine, but sometimes the stools in congenital atresia of the bile-ducts are yellowish. The liver is usually much enlarged and firm. Rarely is it possible to palpate the gall-bladder. Even with modern laboratory methods it is notoriously difficult to distinguish these cases from jaundice due to sepsis, congenital syphilis, icterus gravis, hepatitis and cirrhosis, and, in the first days of life, physiological jaundice.

Urinary Retention

Retention of urine is an uncommon symptom in the newborn, but it must be realised that the normal newborn often retains urine for one or two days. This apparent anuria has at times frightened medical attendants into passing a catheter, with unfortunate consequences, since the very sensitive urethral mucosa of these babies is intolerant of irritation, and the resulting acute retention of urine due to œdema of the urethral mucosa is difficult to treat.

CAUSE OF DEATH

Intestinal obstruction (with or without peritonitis) and respiratory infection (with or without atelectasis) were the two commonest causes of death. Shock or heart-failure may occur in the postoperative period. The danger of meningitis following operations for spina bifida is well known. Hepatic cirrhosis was responsible for the deaths of 4 babies with obstructive jaundice. Uræmia as a cause of death secondary to malformation or infection of the urinary tract is comparatively uncommon.

TABLE VII—CAUSES OF DEATH

Cause of death	Liverpool	Great Ormond Street
Shock and heart-failure ..	9 (16·6%)	5 (17·2%)
Peritonitis	7 (12·9%)	4 (13·7%)
Intestinal obstruction	5 (9·3%)	1 (3·4%)
Volvulus	3 (5·5%)	1 (3·4%)
Cirrhosis	4 (7·4%)	3 (10·3%)
Pneumonia	6 (11·1%)	6 (20·6%)
Empyema and Mediastinitis ..	1 (1·8%)	3 (10·3%)
Meningitis	4 (7·4%)	1 (3·4%)
Pyonephrosis	1 (1·8%)	2 (6·9%)
Hydronephrosis	1 (1·8%)	1 (3·4%)
Atelectasis	5 (9·3%)	..
Uræmia	1 (1·8%)	..
Paralytic ileus	1 (1·8%)	..
Curare poisoning	1 (1·8%)	..
Over-transfusion	1 (1·8%)	..
Gastro-enteritis	3 (5·5%)	..
Liver abscess	..	1 (3·4%)
Anaræmea	..	1 (3·4%)
Unknown	1 (1·8%)	..

but perhaps it is sometimes overlooked because it is not easily recognised. Secondary gastro-enteritis was unexpectedly infrequent among the babies in the present series, only 3 of them dying of it (table VII).

COMPARABLE DATA FROM THE HOSPITAL FOR SICK CHILDREN, GREAT ORMOND STREET

No similar survey made on an area or population basis has been published; so there are no strictly comparable data. I have therefore summarised for comparison the main details of 60 newborn infants admitted to the Hospital for Sick Children, Great Ormond Street, in 1949 for surgical treatment. The numbers in the two groups are not grossly dissimilar, and it will be seen that, after division of the cases into different pathological categories, the resemblance between the two groups is borne out. However, the Liverpool group contains all the cases in which a surgical lesion was proved, even if they were not transferred to hospital, whereas the Great Ormond Street group is to some extent selected, in that the babies must all have been thought suitable for transfer from their place of birth. It is not surprising that the survival-rate is much higher in the Great Ormond Street

TABLE VIII—SEASONAL INCIDENCE

Month	Liverpool	Great Ormond Street
January	7	1
February	1	4
March	4	6
April	5	8
May	6	4
June	8	7
July	7	2
August	7	6
September	5	7
October	10	6
November	6	5
December	9	4

series, since this is a highly specialised hospital, whereas in Liverpool the children were operated on in various hospitals, some of them not ideally equipped for this type of surgery.

Of the 60 babies admitted to Great Ormond Street 29 (48·3%) died (table II). In comparison with Liverpool, it is very striking that only 2 children were not treated surgically and both died. 58 were operated on with a mortality of 46·5%. In both series there is a preponderance of boys, but the proportion of premature babies is much smaller in Great Ormond Street (16·6% of the total, against 41·3%). Table III shows that the different types of lesions are comparable in the two groups, and table VI that the presenting signs and symptoms are also similar.

As regards the mortality at Great Ormond Street there were no deaths due to secondary gastro-enteritis. This is a fine achievement.

ÆTIOLOGY

A great deal has been written in the last thirty years about the ætiology of congenital malformations; yet we still know little about the causal factors. Except for some very rare malformations—e.g., brachydactyly and achondroplasia—due to dominant genes, and some types of microcephalic idiocy due to recessive genes, very few malformations can be said to be determined solely on a genetic basis. The epoch-making work of Gregg (1941) and Swan (Swan et al. 1943, Swan and Tostevin 1946) drew attention to maternal rubella as a cause of congenital malformations. Toxoplasmosis is another infection in which some of the offspring may have deformities (Sabin 1942). However, the incidence of these infections in pregnant women is very low and accounts for only a minute proportion of all congenital malformations.

I cannot here discuss the ætiology in any detail, but a few observations may not be out of place.

Seasonal Incidence of Congenital Malformations

McKeown and Record (1951) found a significantly higher incidence of anencephaly in children born between October and March. There was no evidence of seasonal variation in the incidence of spina bifida or of hydrocephalus.

TABLE IX—MATERNAL AGE

Age of mother at maternity (yr.)	England and Wales	Liverpool	Expected figures
Less than 20 ..	31,753	3	3·3
20–24	200,406	22	20·6
25–29	244,607	22	25·2
30–34	136,767	15	14·1
35–39	87,398	13	9·0
40 or more ..	27,636	..	2·8

Neither Murphy (1947) nor Carter (1950) could find any significant seasonal incidence. In the Liverpool and Great Ormond Street series table VIII shows no significant season-variation.

Maternal Age

It is well known that the incidence of mongolism increases with the age of the mother and possibly of the father, and several surveys have been published which seem to prove that children with congenital malformations are more commonly born to older mothers (Murphy 1947, Malpas 1937, Landtman 1948). Carter (1950), however, showed that the association of maternal age with malformations in the offspring became insignificant if mongolism was excluded. The maternal ages in the Liverpool series are shown in table IX and compared with the number of mothers in all age-groups who were delivered of a live child as reported by the registrar for births and deaths; there appears to be no significant increase in the incidence of babies with "surgical" malformations born to the older mothers.

Birth Order

It has often been stated that there is a raised incidence of certain malformations both in first pregnancies and in pregnancies after the fifth or sixth (Baird 1945, Murphy 1947). Carter (1950) failed to confirm this observation. The birth orders of the children with congenital malformations in the Liverpool region compared with those

TABLE X—BIRTH ORDER OF LEGITIMATE CHILDREN

Birth order of child	England and Wales	Liverpool	Expected figures
1	278,074	36	29·9
2	222,765	17	24·0
3	102,048	8	11·0
4	44,448	8	4·8
5	21,363	2	2·3
6	11,693	2	1·3
7	6916	1	0·7
8 or more ..	10,846	..	1·2

of the country as a whole can be seen in table x. There seems to be no statistically significant association between the incidence of surgical malformations and the birth order of the children.

Previous Obstetric History

Murphy suggested that malformations were liable to occur in pregnancies following previous *abortions*, and this has been the impression of many clinicians working in this field. In the Liverpool survey 3 mothers gave a history of previous miscarriages. One of them had two successive miscarriages before the birth of the affected child.

Murphy (1947) found a definite tendency for *malformations* to recur in some families. However, Malpas (1937) and Carter (1950) state that the chances of a mother giving birth to a malformed child are not greatly increased when she has previously given birth to one. Individual deformities—e.g., malformations of the central nervous system, cleft palate, and hare-lip—are known to recur in some families (Penrose 1946, Fogh-Anderson 1943). In the present Liverpool series 3 babies had a family history of congenital malformations: (1) the elder brother of a baby with malrotation of the midgut had died at the age of 3 months of a similar abnormality; (2) a baby with a strikingly underdeveloped mandible had a father with severe micrognathia; and (3) the elder sister of a girl dying with myelocele had died at the age of 16 months of a similar complaint.

Maternal Morbidity

Besides rubella and toxoplasmosis, certain other diseases of the mother are known to be associated with malformations in the offspring; but in any series of congenital malformations the mother's history seldom reveals any infectious illness during pregnancy (Capon 1950). Diabetes mellitus is a good example (White 1935), and certain virus infections in addition to rubella—e.g., mumps, varicella, herpes zoster, influenza, poliomyelitis, and infective mononucleosis—have recently come under suspicion (Swan and Tostevin 1946). The rôle of toxins in producing congenital malformations has received renewed attention as a result of the brilliant work of Duraiswami (1950) on insulin-induced malformations in the chick. There is a raised incidence of deformity in children born of mothers who have had toxæmia of pregnancy (Ministry of Health 1949).

Of the 75 Liverpool mothers of the children under discussion 3 had had no antenatal supervision; so no adequate records are available. Of the remaining 72, 19 (26%) had had some disease during pregnancy: 6 toxæmia, 5 severe hydramnios, 2 pyelitis, 2 hypertension, 2 antepartum hæmorrhage, 1 fibroids, and 1 epilepsy. None of the mothers gave a history of virus infection during pregnancy.

The high incidence of hydramnios is of interest in view of the theory that environmental changes in utero may play a part in the causation of malformations. This theory was first suggested by Mall (1908) and has been greatly developed by Browne (1951b) during the last fifteen years.

Since the pioneer work of von Hippel and Pagenstecher (1907) it has been recognised that deep X-ray therapy of the mother may cause malformations in the offspring. None of these mothers had had X-ray therapy before or during pregnancy.

Diet and Social Status

Neonatal mortality can be influenced by the diet of women during pregnancy (Balfour 1944, Townsend and Reese 1944). The work of Hale (1933) and of Warkany and others (Warkany 1943, Warkany et al. 1948) has shown that in certain animals vitamin deficiency in the mother can cause malformation in the offspring. In man it is obvious that diet and social status are closely related. From his extensive study of infant mortality in the country boroughs of England and Wales Woolf (1947) concluded that poverty and overcrowding are of about equal importance in infant mortality. I therefore tried to assess the diet and social status of the mothers in the present survey, though I recognised that in these days of rationing and social equalisation the importance of these factors is unlikely to be very great.

Of the 75 mothers 4 were decidedly poor, and 3 of these had a grossly inadequate diet during pregnancy. The homes of 10 mothers were reported to be bad. 15 women did some work apart from household duties during pregnancy: 7 did light work for two to four months, 7 for four to seven months, and 1 did heavy manual work for seven months.

CONCLUSIONS

The surgery of the newborn is perhaps the most neglected branch of surgery. In this country centres for neonatal surgery are practically unknown, and little effort has been made to develop this important subject. In the United States, under the leadership of Professor Ladd and Professor Gross, pædiatric surgery in general, and the surgery of the newborn in particular, has made spectacular progress during the last fifteen years. Indeed, it can be said that in no other branch of surgery, with the possible exception of thoracic surgery, has progress been so striking. Unfortunately we in Great Britain have failed to keep in step with these new developments.

If in this country we are to improve the chances of survival of children born with congenital malformations, an efficient neonatal surgical service must be organised. As the National Health Service has divided the country into administrative self-supporting regions, neonatal surgical centres should be developed on a regional basis. The total number of cases suitable for treatment is relatively small and in the ordinary way a surgeon is unlikely to see more than one or two cases a year, from which he can hardly gather enough experience to deal correctly with these complicated surgical problems. In an area the size of the Liverpool region there is enough material to justify the establishment of a centre for neonatal surgery. The costs would be small compared with those of other special surgical centres.

This branch of surgery is still in its experimental stage, and surgeons who want to devote themselves to it will have to spend much time in investigating and treating these babies. We know, as yet, very little about the anatomy, physiology, and embryology of malformations; we know even less about the pathological and biochemical changes in newborn infants undergoing lengthy and severe operations. Without the close coöperation of surgeons, pædiatricians, pathologists, and anæsthetists experienced in this type of work no hope of progress can be entertained; and the recovery of these children will also depend largely on the quality of the nursing. The nurses will need very special instruction and training. Constant and devoted supervision is absolutely necessary if sudden preoperative and postoperative deaths are to be avoided.

From these considerations it is clear that the neonatal surgical centre should, if possible, be attached to a large children's hospital. In an area the size of the Liverpool region the centre should ideally be housed in a separate small ward with cubicles for about 6–8 cots and with accommodation for nursing mothers. Newborn infants should not be nursed in wards which admit older children, because the danger of cross-infection is great. Special equipment—e.g., specially constructed cots, oxygen tents or boxes, and low-pressure suction machines—is essential, but the cost is not likely to be high. A fully trained qualified sister or nurse should be at hand, day and night.

It would be futile to establish such a centre without ensuring prompt diagnosis and transfer of these children. Fortunately, in Liverpool most of the larger hospitals

in the peripheral areas of the region enjoy the services of local pædiatricians who maintain close contact with the university department of child health, and we thus have the basis on which a unit could be established. It would be important to draw the attention of the general practitioners, obstetric house-officers, and midwives to the significance of the early clinical signs of these conditions.

Finally, a word about the qualifications and training of surgeons undertaking this sort of work. I can do no better than to quote Professor Ladd:

"The common practice in children's hospitals of having the pædiatrician make the surgical diagnosis, running the preoperative and postoperative care and calling a surgical consultant for the operation only, is not a good one. This policy makes of the so-called surgeon only a surgical technician or craftsman, and the patient necessarily suffers."

Discussing neonatal surgery Professor Ladd said:

"The surgeon who undertakes these operations should be familiar with the factors of early development of the infant, of his feeding requirements, of possible blood dyscrasias, of the details of electrolyte and water balance requirements."

SUMMARY

An attempt is made to examine some of the causes of the high mortality-rate in neonatal surgery in this country. The magnitude and nature of the problem so far as it affects the Liverpool region has been investigated.

All neonatal surgical cases admitted to the Hospital for Sick Children, Great Ormond Street, in 1949 have been surveyed to provide some sort of comparative figures.

The clinical manifestations, causes of death, and aims of treatment have been described in some detail, and some of the ætiological factors have been statistically investigated.

The development of neonatal surgical centres on a regional basis is advocated.

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BIBLIOGRAPHY

Allen, F. M. B. (1950) *In* L. G. Parsons's Modern Trends in Pædiatrics. London.
— Macafee, C. H. G., Biggart, J. H. (1943) *J. Obstet. Gynæc.* **50**, 417.
Baird, D. (1945) *Ibid*, **52**, 217.
Balfour, M. I. (1944) *Lancet*, i, 208.
Belsey, R. H. R., Donnison, C. P. (1950) *Brit. med. J.* ii, 324.
Bodian, M., Carter, C. O., Ward, B. C. H. (1951) *Lancet*, i, 302.
Browne, D. (1949) *Practitioner*, **162**, 132.
— (1951a) *Ann. R. Coll. Surg.* **8**, 173.
— (1951b) Hunterian lecture.
Campbell, J. B. (1948) *Amer. J. Surg.* **75**, 231.
Campbell, M. F. (1938) *Ibid*, **39**, 438.
— (1941) *J. Urol.* **45**, 598.
Capon, N. B. (1950) *Brit. med. J.* i, 859.
Carter, C. O. (1950) *J. Obstet. Gynæc.* **57**, 897.
Dobbs, R. H. (1943) *Med. Pr.* **209**, 276.
Douglas, B. (1946) *Plast. reconstruct. Surg.* **1**, 300.
Duraiswami, P. K. (1950) *Brit. med. J.* ii, 384.
Farber, S. (1933) *J. Amer. med. Ass.* **100**, 1753.
Fogh-Anderson, P. (1943) Inheritance of Hare-lip and Cleft Palate Copenhagen.
Forshall, I. (1947) *Brit. J. Surg.* **35**, 58.
—, Rickham, P. P., Mossman, D. B. (1951) *Arch. Dis. Childh.* **26**, 294.
Franklin, R. H. (1947) *Lancet*, ii, 243.
Gaisford, W. (1948) *Brit. med. J.* ii, 969.
Glover, D. M., Barry, F. M. (1950) *Ann. Surg.* **130**, 480.
Gregg, N. M. (1941) *Trans. ophthal. Soc. Aust.* **3**, 35.
Gross, R. E. (1948) *Surgery*, **24**, 277.
— Clatworthy, H. W. jun. (1950) *Pediatrics*, **5**, 68.

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INFECTIVE HEPATITIS IN A BOARDING-SCHOOL

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THE many reports in recent years on outbreaks of infective hepatitis have mostly described its incidence among troops during and after the late war. As Paul and Gardner (1950) point out, outbreaks among civilians have been less often reported. In particular there are few accounts of epidemics in closed communities, with personal study of cases as they occurred. Most of the descriptions of civilian epidemics relate to whole districts or towns, and the investigation has sometimes been made, after the epidemic, by an outside observer. Four papers on hepatitis in closed communities are the following:

Glover and Wilson (1931) describe an epidemic in three boarding-schools in which 95 boys were affected (24%).

McLeod (1944) describes 100 cases in a colony for mental defectives, with the highest age-incidence between 10 and 14 (34%). The lowest-grade imbeciles were more frequently affected.

Neefe and Stokes (1945) describe 350 cases out of 572 at risk, developing in thirteen weeks from the contaminated water-supply of a camp.

Horstmann, Havens, and Deutsch (1947) give accounts of epidemics in two children's institutions, emphasising the frequency, but also the mildness, of the disease in children.

The present outbreak occurred between October, 1950, and January, 1951, in a boys' preparatory school. Apart from one outing with parents by the boys, and journeys to the town (where hepatitis was not prevalent) by the staff, the community can be regarded as closed throughout the term (Sept. 19 to Dec. 13). The personnel can be grouped into (A) 69 boys aged 6–13; (B) 12 adult teaching and nursing staff; and (C) 9 adult domestic staff. Of these 90, 50 developed symptoms definitely or strongly suggestive of hepatitis, and so did

MR. RICKHAM: BIBLIOGRAPHY—*continued*

Grove, L., Rasmussen, E. (1950) *Ann. Surg.* **131**, 869.
Hale, F. (1933) *J. Hered.* **24**, 105.
Hiatt, R. B., Wilson, P. E. (1948) *Surg. Gynec. Obstet.* **87**, 317.
Ingraham, F. D., Bailey, O. T. (1946) *J. Neurosurg.* **3**, 511.
Kredel, F. E. (1950) *Ann. Surg.* **131**, 865.
Ladd, W. E. (1940) *New Engl. J. Med.* **222**, 349.
— (1943) *Penn. med. J.* **46**, 677.
— (1948) *Surg. Gynec. Obstet.* **86**, 147.
— Grose, R. E. (1941) Abdominal Surgery of Infancy and Childhood. Philadelphia.
Landtman, B. (1948) *Arch. Dis. Childh.* **23**, 327.
Longmire, W. P. jun., Sanford, M. C. (1948) *Surgery*, **24**, 264.
— — (1949) *Amer. J. Dis. Child.* **78**, 759.
Low, J. R., Cooper, G. jun., Cosby, L. jun. (1949) *Surgery*, **26**, 223.
McKeown, T., Record, R. G. (1951) *Lancet*, i, 192.
Mall, F. P. (1908) *J. Morph.* **19**, 1.
Malpas, P. (1937) *J. Obstet. Gynæc.* **44**, 434.
Mayo, C. W., Rice, R. G. (1950) *Surgery*, **27**, 485.
Miller, H. C. (1950) *Pediatrics*, **5**, 320.
Ministry of Health (1949) *Rep. publ. Hlth med. Subj.* no. 94.
Murphy, D. P. (1947) Congenital Malformations. Philadelphia and London.
Neuhauser, E. B. D. (1944) *Amer. J. Roentgenol.* **51**, 421.
Norman, A. P. (1949) *Arch. Dis. Childh.* **24**, 25.
Penrose, L. S. (1946) *Ann. Eugen., Camb.* **13**, 73.
Potter, E. L., Adair, F. L. (1943) *Amer. J. Obstet. Gynec.* **45**, 1054.
Rees, G. J. (1950) *Brit. med. J.* ii, 1419.
Rickham, P. P. (1950a) *Ibid*, i, 940.
— (1950b) *Summ. Communications Int. Congr. Pediat.* **3**, 391.
— (1950c) *Ibid*, p. 393.
Sabin, A. B. (1942) *Advances Pediat.* **1**, 1.
Sanford, H. N., Shmigelsky, I. (1945) *J. Pediat.* **26**, 149.
Simpson, J. Y. (1838) *Edinb. med. J.* **50**, 390.
Swan, C., Tostevin, A. L. (1946) *Med. J. Aust.* i, 645.
— — Moore, B., Mayo, H., Black, G. H. B. (1943) *Ibid*, ii, 201.
Swenson, O. (1950) *Summ. Communications Int. Congr. Pediat.* **1**, 189.
Thomsen, G., Wamberg, E. (1950) *Ibid.*
Townsend, J. C., Reese, M. K. (1944) *Amer. J. Dis. Child.* **66**, 511.
von Hippel, D., Pagenstecher, H. (1907) *Münch. med. Wschr.* **54**, 1385.
Warkany, J. (1943) *Amer. J. Dis. Child.* **66**, 511.
— Roth, C. B., Wilson, J. G. (1948) *Pediatrics*, **1**, 462.
White, P. (1935) *Surg. Gynec. Obstet.* **61**, 324.
Woolf, B. (1947) *Brit. J. soc. Med.* **1**, 73.
Zuelzer, W. W., Wilson, J. L. (1948) *Amer. J. Dis. Child.* **75**, 40.

3 others who came into later contact with the original group. Of the 50, 44 were boys (group A) (63·8%) and 6 adults (group B) (50%). None of group C were known to be infected. The incidence bore no obvious relation to contact in dormitories, classrooms, or elsewhere. All cases were seen by me except nos. 42–45, 47–49, and 53, in which the illness started during the holidays. All parents had been asked to report any suspicious symptoms in the boys, or their home contacts.

DISCUSSION

Symptoms and Signs

Apart from the symptoms listed in table I, nearly every case started with one or more of the following: nausea, vomiting, severe anorexia, pain behind the eyes, giddiness, slight fever, or merely a typical slightly greyish pallor. As the epidemic progressed, the nurses began to spot the mildest cases by this pallor alone, and other confirmatory symptoms often followed. The passage of dark urine was observed, for a short period only, in some cases (cf. Franklin's case quoted by Cullinan 1939). Many cases—especially early in the epidemic—were so mild that, had an epidemic not been in progress, they would certainly have been missed.

TABLE I—SUMMARY OF THE CASES

Case no.	Age	Onset of symptoms (days after onset in case 1)	Clinical findings		
			Jaundice	Liver enlarged	Pale stools observed
1	8	0	Yes	Yes	Yes
2	8	20	No	No	No
		29*	Slight	Yes	Yes
3	10	21	No	No	No
		27*	No	No	No
4	11	21	Marked	Marked	Yes
5	25	23	Yes	Yes	Yes
6	12	24	No	Yes	Yes
7	6	24	No	No	No
8	13	25	No	No	No
9	13	25	No	No	No
10	11	25	Slight	Slight	Yes
11	10	26	No	No	No
12	13	26	No	No	No
13	12	26	No	No	Slight
14	11	27	No	No	No
15	9	27	No	No	No
16	11	27	No	No	No
17	19	27	No	Slight	Yes
18	9	28	No	No	No
19	9	28	No	No	Yes
20	13	28	No	No	No
21	12	28	No	No	No
		60*	Yes	Yes	?
		114*	No	Marked	No
22	8	29	Slight	Yes	Slight
23	8	29	Slight	Yes	Yes
24	8	30	No	No	No
25	9	31	Marked	Marked	Yes
26	10	31	No	Yes	Yes
27	11	32	Yes	Yes	Yes
28	11	32	No	No	No
29	9	32	No	No	Slight
30	10	47	Marked	Marked	Yes
31	9	48	Slight	No	No
32	±40	48	Yes	Yes	Yes
33	11	50	No	No	No
34	9	50	No	No	Slight
		61*	Yes	Yes	Slight
35	9	51	Marked	Marked	Marked
36	9	51	No	No	No
37	11	51	No	Slight	No
38	8	51	Slight	Yes	Slight
39	8	52	No	No	No
40	11	54	Yes	Yes	Yes
41	25	54	No	No	No
		73*	Yes	Slight	Slight
42	12	55	Slight	No	No
43	12	57	?	No	No
		63*			
		67*			
44	8	57	Yes	?	?
45	11	59	Yes	Marked	Yes
46	±40	59	Marked	Marked	Marked
47	10	62	No	No	No
48	11	63	? ("urine dark")	?	?
49	±30	72	Slight ("bilirubin raised")	?	Slight
50	9	79	Yes	Yes	Slight
51	19	66 (19–25 after contact)	Very slight	No	No
52	15	90 (26 after contact)	Very slight	No	No
53	19	96 (25–39 after contact)	Yes	?	?

* Recurrence of symptoms after apparent recovery.

END OF TERM
NO OF CASES STARTING PER DAY
1
2
3
4
0 8 18 28 38 48 58 68 79
DAYS AFTER FIRST CASE
0 10 20 30 40 50 60 70 80 90 100 111
DAYS AFTER TERM STARTS

In 2 such cases (nos. 51 and 52), as the patient was due to return to other institutions, it was imperative to make a diagnosis, and this was confirmed by blood-bilirubin levels of 4·0 and 2·8 mg. per 100 ml. respectively. Both had positive colloidal-gold liver function tests. I have no doubt that similar figures could have been obtained in other mild cases. The histamine test, studied by Brodribb and Cullinan (1936), was not performed as a routine, because it was considered too painful for these small boys. It was tried on one or two convalescents to observe the recovery of their jaundice. In these cases the weal was produced with a stinging-nettle, on the forearm, rather than with intradermal histamine.

During the subsequent term, some cases of gastro-enteritis occurred. Their distribution seemed quite unrelated to the hepatitis, but those who were victims of both were all agreed that the gastro-enteritis produced shorter and sharper symptoms, with a more definite termination, and no recurrence.

Form of Epidemic

The figure illustrates the form of the epidemic. It is generally recognised that the disease is most prevalent in autumn and early winter. It is also certain that 5–15 is the most susceptible age-group (Ford 1943, McLeod 1944, Horstmann et al. 1947, Naughton et al. 1950, and *Lancet* editorial 1950). Davis and Hanlon (1946) describe an epidemic in which exposed persons were affected as shown in table II.

In the present outbreak the equivalent figure for the similar age-groups together is 63·8%. Cases developed in batches at intervals, as noticed by Pickles (1930), Cullinan (1939), McLeod (1944), and Naughton et al. (1950), and covered about 3 months, as described in Army units by Gauld (1946). As will be seen from table I, there were few severe cases, and these were mainly in the third wave.

Incubation Period and Infectivity

It is important to differentiate between the time of onset of early symptoms and the time of onset of jaundice. The former standard has been adopted here. Pickles (1930) established the usual incubation period as 20–35 days, and this has been confirmed many times (Findlay et al. 1931, Cullinan 1939, *Lancet* editorial 1950, and Naughton et al. 1950). The peak period is about 27 days (Pickles 1930, Newman 1942, Kunkel and Hoagland 1947).

Case 1 developed 32 days after return to school from a town in which hepatitis was prevalent: this boy had not eaten outside his home, except on the train, and he had had no known contact with other cases. The second wave consisted of 28 cases between the 20th and 32nd days from the onset in case 1, the greatest number developing between the 26th and 28th days. The third

wave started 27 days after the beginning of the second, and lasted 16 days. The fourth wave started 25 days after the beginning of the third wave.

Case 51 came home on leave. He lived and fed out, and saw only his parents. He was at home for 7 days, and his mother became ill on the day after he left (case 32). His contact with her was 19–25 days before he developed symptoms.

Case 52 developed mild hepatitis 26 days after feeding with case 46, who was ill at the time.

Case 53, a sister of one of the boys, became ill 25 days after he had apparently recovered. He had had suggestive symptoms for 14 days previously and had been in contact with her throughout this time.

Case 32 must have been infectious before the onset of *any* symptoms, confirming Cullinan's (1939, 1943) suggestions. Cullinan holds that infectivity does not persist after jaundice is established, but Meenan (1951) recently reported a case in which the disease was apparently transmitted by a kiss 13 days after the onset of symptoms.

Treatment

The treatment consisted in rest in bed (apart from going to toilet), saline purgatives, and a low-fat high-carbohydrate diet. In the worst cases the diet was fat-free, and in all cases cooked fats were reintroduced only gradually. The mildest of cases, with exceptions to be described below, were left in bed for 7 days, and the more serious until the symptoms and signs had disappeared. Hard exercise was forbidden for some weeks after this. Most of the boys were feeling so well that the rigid standards adopted by Swift et al. (1950) would have been quite impracticable.

TABLE II—INCIDENCE OF HEPATITIS IN TWO AGE-GROUPS (DAVIS AND HANLON 1946)

Age-group	Proved hepatitis	All minor gastric disturbances included
5–9	37·7%	56·6%
10–14	49·2%	63·5%

Relapses

The relapses can be divided into (1) a quick recurrence of symptoms during an attack, and (2) a further attack, after a longer interval, due to liver damage or a fresh infection. Pickles (1930) describes a very severe case developing after hard exercise taken after the initial symptoms had appeared. Naughton et al. (1950) describe relapses of the first type among school-children. Findlay et al. (1931) noted the tendency to relapse at intervals of 1 or 2 months. Examples of both types were seen in this outbreak.

Cases 2 and 3 complained of mild gastric symptoms and were left in bed for 2 or 3 days only. It was not realised, then, that they had hepatitis. Within a few days the symptoms returned, much worse than before, and case 2 developed a large liver, jaundice, and pale stools. Thereafter all cases of gastric upset, however mild, were put to bed for 7 days.

Case 21 had mild symptoms, similar to the others, starting on the 28th day. On the 60th day, at home, he had a recurrence, and was much more severely ill. On the 114th day, in the subsequent term, he became pale, went off his food, and again had enlargement of the liver lasting 1 week. The blood-bilirubin was normal at this time, but the colloidal-gold test was 4+. I have no doubt that this was a late mild relapse of the type described by Dickson (1945), occurring in Army convalescent homes. The treatment was 1 week in bed, after which all symptoms and signs had disappeared.

Case 34 was treated on the usual lines. As the stools were pale, he was not allowed up, but on the 11th day he suddenly developed a large liver, jaundice, and fever. This was the only case, after the routine period of rest was imposed, in which there was a quick relapse.

Case 43 developed headache, vomiting, and fever at home. He was allowed up after 5 days, and the symptoms recurred. He was allowed up again after 2 days, and after he had been about for 2 days they recurred again.

Case 41 felt "cold and off colour" and had pallor and anorexia. He went home, but kept about for a week or so. He soon returned to full activity, but 19 days later developed epigastric pain and subsequent jaundice.

Case 46 lived alone in the holidays, and, though the symptoms were obvious, he continued to get about. Within a week he was deeply jaundiced, and he was ill for a longer time, and more severely, than any of the other patients.

These cases strongly suggest that any patient who develops gastric symptoms after contact with infective hepatitis should be put to bed immediately, and kept there for at least a week. This is an essential precaution if one is to prevent relapses and minimise liver damage.

Severity

As table I shows, only 7 boys out of 44 had anything more than the mildest attack. One of these (no. 21) was worse during a relapse; only nos. 4, 25, and 35 could be described as moderately severe. No. 25 had a palpable liver and a blood-bilirubin of 2·2 mg. per 100 ml. nearly 3 months after the onset, but he had then been free of symptoms for 2 months. After a further week in bed, the bilirubin level was less than 1 mg. In contrast, the 6 adults were more severely ill, and in the 3 oldest victims malaise and depression persisted for a considerable time.

Mode of Spread

The most striking feature of the outbreak was the absence of any cases in the domestic staff (group C). Many of them were young, and presumably very liable to the infection. They certainly had contact with the boys, but not such close contact as group B. They fed on the same food, but they ate separately and used their own feeding utensils. Groups A and B fed together, sharing another set of cups and cutlery, which were washed separately. Only their large plates were washed with those of group C.

This has a parallel in the much greater tendency of officers to develop the disease, compared to other ranks, as shown by Cullinan (1943), Spooner (1944), and Truelove (1945). A possible explanation was that immunity had been acquired in those of lower social status, and this would equally apply to group C. A more attractive theory, discussed by Witts (1944) and McFarlan (1945), is that feeding utensils spread the disease. Vincent's infection certainly spreads through army units in this way, and can be prevented by sterilisation. As soon as this possibility was recognised, all proved cases at the school had marked individual feeding utensils, and during the holidays all the forks, spoons, cups, and tooth-mugs were sterilised in boiling water. No further cases occurred; but the epidemic was anyhow due to end at this time.

Neefe and Stokes (1945) traced one epidemic to well-water infected by fæcal contamination, and the *Lancet* (1950) has recently cited experiments by Henle et al. (1950) in which volunteers appeared to develop the disease from a 10^{-20} dilution of infected fæces taken orally. If such dilutions can cause infection, this might account for the high incidence observed in families and schools (Ford 1943, Gauld 1946, Davis and Hanlon 1946, Naughton et al. 1950). Kunkel and Hoagland (1947) describe a family in which 9 out of 10 children developed hepatitis, together with 2 of their friends. In this case, beds were shared and contact very close. They believe that fæcal contamination accounted for this very high incidence. In that epidemic, also, a large proportion of the cases (6) never developed jaundice.

Study of the present epidemic confirms once again the high infectivity of hepatitis in schools. This depended on *close* contact, and the infection spread among those using common cups and cutlery. This fact, and the symptoms, suggest that contagion is a likely means of spread, and that the mouth is the portal of entry.

SUMMARY

An outbreak of infective hepatitis in a boarding-school, is described. Among 90 people in the school there were 50 cases, and 3 others occurred among outside contacts.

As is usual, cases developed in batches, at monthly intervals.

The domestic staff of the school, who ate separately, did not contract the disease.

A review of the cases, and of relevant published information, suggests that whenever suspicious symptoms occur in a hepatitis contact, strict rest in bed should be ensured so as to minimise liver damage.

I am indebted to the parents and doctors of boys who developed the disease in the holidays for their trouble in sending me details of their cases. I am specially grateful to the headmaster's wife, and the matron, for their care of the patients, and their notes and comments on the disease, both objective and subjective. They both became victims of it. Lastly I want to thank Dr. E. R. Cullinan for his valuable advice and suggestions.

REFERENCES

Brodribb, H. S., Cullinan, E. R. (1936) *Lancet*, i, 1237.
Cullinan, E. R. (1939) *Proc. R. Soc. Med.* **32**, 935.
— (1943) Report to War Office on Infective Hepatitis (unpublished).
Davis, D. J., Hanlon, R. C. (1946) *Amer. J. Hyg.* **43**, 314.
Dickson, A. C. (1945) Proceedings of conference of Army physicians, C.M.F. Rome; p. 39.
Findlay, G. M., Dunlop, J. L., Brown, H. C. (1931) *Trans. R. Soc. trop. Med. Hyg.* **25**, 7.
Ford, J. C. (1943) *Lancet*, i, 675.
Gauld, R. L. (1946) *Amer. J. Hyg.* **43**, 248.
Glover, J. A., Wilson, J. (1931) *Lancet*, i, 722.
Henle, W., Harris, S., Henle, G., Harris, T. N., Drake, M. E., Marigold, F., Stokes, J. (1950) *J. exp. Med.* **92**, 271.
Horstmann, D. M., Havens, D. P., Deutsch, J. (1947) *J. Pediat.* **30**, 381.
Kunkel, H. G., Hoagland, C. C. (1947) *New Engl. J. Med.* **236**, 891.
Lancet editorial (1950) ii, 915.
McFarlan, A. M. (1945) *Quart. J. Med.* **14**, 125.
McLeod, K. W. (1944) *J. Pediat.* **24**, 244.
Meenan, P. N. (1951) *Lancet*, i, 447.
Naughton, M., Russell, J. J., Meenan, I. N. (1950) *Irish J. med. Sci.* **292**, 184.
Neefe, J. R., Stokes, J. (1945) *J. Amer. med. Ass.* **128**, 1063.
Newman, J. L. (1942) *Brit. med. J.* i, 61.
Paul, J. R., Gardner, H. T. (1950) *Amer. J. Med.* **8**, 565.
Pickles, W. N. (1930) *Brit. med. J.* i, 944.
Spooner, E. T. C. (1944) *Proc. R. Soc. Med.* **37**, 171.
Swift, E. W., Gardner, H. T., Moore, D. J., Streetfield, F. H., Havens, W. P. (1950) *Amer. J. Med.* **8**, 614.
Truelove, S. C. (1945) Proceedings of conference of Army physicians, C.M.F. Rome; p. 44.
Witts, L. J. (1944) *Brit. med. J.* i, 739.

THE HYPOTHERMIC AND ANTIPYRETIC EFFECT OF PREPARATIONS OF A.C.T.H.

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A COMMON effect of A.C.T.H. in febrile conditions is to lower the body-temperature or even to restore it to normal. This action is usually attributed, by implication at least, to a modification of the disease through the release of adrenal cortical hormones, the lowering of body-temperature being regarded as secondary to this. We find, however, that preparations of A.C.T.H. lower body-temperature even in the absence of pyrexia.

During routine investigation of samples of A.C.T.H., which involved tests for freedom from contamination by pyrogenic material during manufacture, it was observed that all the samples of A.C.T.H. tested lowered the normal body-temperature of the rabbits used.

METHODS

The rectal temperatures of trained docile Himalayan rabbits in good health and weighing about 2 kg. were measured with thermocouples enclosed in rubber catheters and inserted 6 in. into the rectum. The animals sat in metal boxes, being restrained only by a metal collar round their necks. Under these conditions, they remained quiet for many hours and retained the catheters in situ during the whole period of the test. The room-temperature was maintained between 19° and 22°C. Injections were made into the marginal vein of the ear with pyrogen-free glassware, needles, and saline solution.

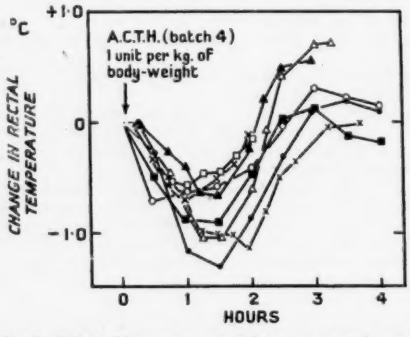

Fig. 1—Effect of intravenous A.C.T.H., batch 4, 1 unit per kg. of body-weight on body-temperature of eight rabbits.

Various samples of A.C.T.H. were used, each of which had been submitted at various times to be tested for freedom from pyrogens. We have given them arbitrary batch numbers 1–9. We shall usually refer to this material simply as A.C.T.H., although it certainly contains other substances.

For experiments with posterior pituitary hormone, extracts were made as described by Burn (1937) from samples of the Pituitary (Posterior Lobe) International Standard.

To induce artificial pyrexia, a preparation of dried bacterial bodies from a strain of *Proteus vulgaris* was used, for which we are grateful to Dr. A. A. Miles. This material has been shown previously (F. C. MacIntosh and W. D. M. Paton, unpublished) to raise the body-temperature 1° or 2°C in these rabbits, when injected in a dose of 1 µg. per kg. of body-weight; this pyrexial response typically begins in about 20–30 min., lasts for over 5 hours, and displays a transient partial defervescence 2–3 hours after the injection.

RESULTS

Hypothermic Effect of A.C.T.H. Preparations

Each of the various batches of A.C.T.H. lowered the rectal temperature when injected intravenously. The fall in temperature began within 15 minutes of injection and progressed steadily to reach its lowest point in about 1½ hours. Recovery then took place and followed a somewhat similar time course, normal temperature being restored about 3 hours after the injection. Fig. 1 shows a typical range of responses obtained by the injection of a single sample (batch 4) in a dose of 1 unit per kg. of body-weight into each of eight rabbits. The response varies with the sample of A.C.T.H., with the dose given, and with the animal used, and considerably larger falls in temperature were sometimes observed. Thus, out of twenty-five tests with various batches at this dose level (1 unit per kg. of body-weight), the temperature fell more than 1°C on twelve occasions; with a larger dose,

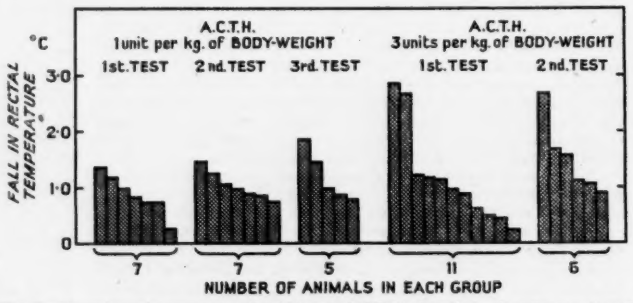

Fig. 2—Hypothermic responses of rabbits to A.C.T.H. 1 unit or 3 units per kg. of body-weight, with repeated tests on the same animals.

REDUCTIONS IN BODY-TEMPERATURE (°C) PRODUCED BY INTRAVENOUS A.C.T.H.

Rabbit no.	A.C.T.H. batch no.									Dose (units per kg. of body-weight)
	1	2	3	4	5	6	7	8	9	
12	..	..	1·17 (*1*)	..	..	..	0·8 (*3*)	..	..	
13	..	..	1·84 (*3*)	..	..	1·25 (*2*)	1·97 (*5*)	..	..	
15	..	..	1·01 (*4*)	..	..	1·45 (*3*)	1·04 (*6*)	..	..	
16	..	..	..	0·5 (*4*)	..	0·99 (*3*)	..	..	..	
24	..	..	..	..	..	..	..	..	1·52 (*4*)	
									0·84 (*3*)	
25	..	..	..	..	..	..	..	..	0·98 (*3*)	1
37	..	..	..	0·74 (*1*)	..	..	..	1·45 (*2*)	..	
38	..	..	..	1·34 (*1*)	..	..	..	0·84 (*2*)	..	
39	..	..	..	0·97 (*1*)	..	..	..	..	..	
40	..	..	..	0·87 (*2*)	0·24 (*1*)	..	..	..	..	
41	..	..	..	0·71 (*2*)	0·74 (*1*)	..	..	..	..	
42	..	..	..	1·25 (*3*)	0·82 (*1*)	..	..	1·05 (*2*)	..	
3	..	..	1·19 (*1*)	..	2·66 (*2*)	..	..	..	..	
8	..	0·93 (*1*)	..	..	1·49 (*2*)	..	..	..	..	
12	..	..	..	..	..	..	..	..	1·07 (*2*)	
13	..	1·16 (*1*)	..	..	..	..	..	..	1·66 (*4*)	
15	0·48 (*1*)	0·88 (*2*)	..	..	..	..	..	..	0·74 (*5*)	
16	..	..	1·13 (*1*)	..	..	..	1·32(*3*)	..	..	
17	..	..	0·59 (*1*)	..	..	..	..	..	..	
18	0·45 (*1*)	..	..	..	1·64 (*2*)	..	..	..	..	3
22	..	..	..	0·89 (*1*)	..	..	..	..	..	
24	..	..	..	2·67 (*1*)	..	..	..	..	..	
				2·76 (*4*)						
25	..	..	..	2·83 (*1*)	..	..	..	..	..	
				1·65 (*4*)						
26	0·21 (*1*)	..	..	..	..	..	..	..	..	

Numerals in parentheses after each result give number of exposure to A.C.T.H. for animal concerned.

3 units per kg. of body-weight, the temperature fell more than 2·5°C in four out of twenty-one tests.

The values obtained in our experiments are shown in the accompanying table. Many of the tests were made on rabbits which had already been injected with A.C.T.H. on one or more occasions; since it was possible that previous exposures to A.C.T.H. might affect the response, the number of the exposure is given in parentheses after each result. Two main points emerge from consideration of the data in this table: (1) with the doses studied (1 and 3 units per kg. of body-weight), each batch of A.C.T.H. caused a fall in body-temperature on every occasion it was tested; and (2) this hypothermic action was observed not only with the first dose of A.C.T.H. in any rabbit but also with all subsequent injections in the same rabbit. From the data it is also clear that the hypothermic response to a given dose of A.C.T.H. may vary in different animals, or even in the same animal, from test to test. The response, moreover, appeared to be greater with bigger doses and tended to increase slightly on a second or third test (fig. 2).

Preliminary experiments have shown that this hypothermic action of A.C.T.H. also follows subcutaneous and intramuscular administration, and that intravenous doses as small as 0·1 unit per kg. of body-weight may be active.

Antipyretic Action of A.C.T.H. Preparations

It has been mentioned that these batches of A.C.T.H. had been submitted to scrutiny for possible contamination with pyrogenic substances. Normally these pyrogens are detected by the appearance of pyrexia, and the hypothermic action we observed must obviously interfere with such a test. Batch 4 appeared to be particularly free from such activity, but in some samples the hypothermic effect was succeeded by a considerable rise in temperature (fig. 3). Since such a rise did not take place in all the batches tested, whereas the hypothermic effect did, the subsequent rise in temperature could not be a consequence of the hypothermia—e.g., a sort of "rebound" phenomenon. The character and time course of the rise in temperature, when it occurred, was compatible with that of pyrogenic contamination. If this reasoning were correct, it followed that A.C.T.H. was modifying the pyrogenic response; for normally the pyrexia from intravenous injection of common pyrogenic materials is well established within an hour of injection and near its highest point about another hour later, whereas in these tests (as in fig. 3) the onset of pyrexial response, if any, appeared much later, being delayed by 1½–2 hours (a time corresponding approximately to the hypothermic phase of the A.C.T.H.).

Our experiments showed that A.C.T.H. interferes with pyrogenic activity in the way suggested. In the experiments recorded in fig. 4 the response to proteus pyrogen (1 µg. per kg. of body-weight) in three rabbits was compared with the response to this pyrogen injected with A.C.T.H. 1 unit per kg. of body-weight (batch 4) in another three rabbits. The rabbits treated with pyrogen alone showed the typical brisk rise in temperature, whereas those which received A.C.T.H. in addition gave a more sluggish response, the pyrexia being delayed, reduced, and preceded by a fall in temperature. In fact, the effect of injecting pyrogen with A.C.T.H. was akin to the response obtained with the more pyrogenic batches of A.C.T.H. (fig. 3). Our conclusion that these samples were contaminated with pyrogen was thus corroborated.

It was shown that A.C.T.H. could not only delay the onset of a pyrogenic response but also reduce an established pyrexia. Pyrexia was established in two rabbits by injection of the pyrogen 1 µg. per kg. of body-weight; at the height of the pyrexia one rabbit was given intra-

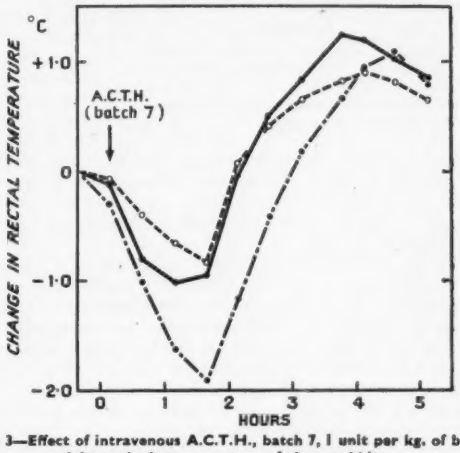

Fig. 3—Effect of intravenous A.C.T.H., batch 7, 1 unit per kg. of body-weight on body-temperature of three rabbits.

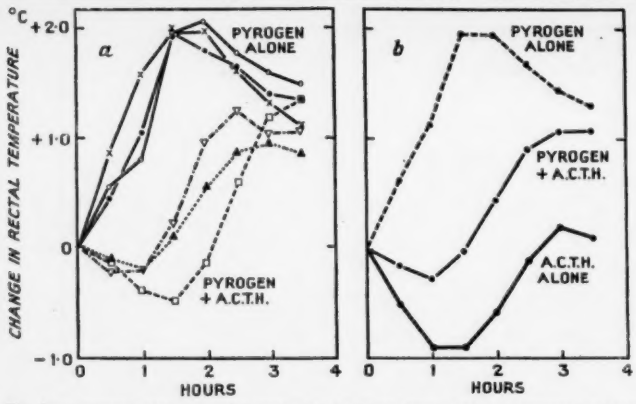

Fig. 4—*a*, upper curves, pyrexial responses to intravenous proteus pyrogen 1 μg. per kg. of body-weight in 3 rabbits; lower curves, responses to intravenous proteus pyrogen 1 μg. per kg. of body-weight and A.C.T.H., batch 4, 1 unit per kg. of body-weight in 3 rabbits; *b*, uppermost and middle curves, data of *a* averaged; lowermost curve, average of responses to A.C.T.H., batch 4, 1 unit per kg. of body-weight alone in 3 rabbits.

venous A.C.T.H. 1 unit per kg. of body-weight, and the temperature rapidly fell to normal; but in the rabbit not treated with A.C.T.H. the pyrexia persisted. The experiment was repeated three days later on the same animals with treatment reversed, and the averaged results are presented in fig. 5.

Effects of A.C.T.H. on Body-temperature not due to Content of Posterior Pituitary Hormone

The material used in these experiments—i.e., commercial preparations of purified A.C.T.H. for clinical use—is not completely pure; hence the effects on body-temperature cannot with certainty be attributed to this hormone. The consistency of these effects suggests that, if they are not due to A.C.T.H., they must be caused by some other material associated with A.C.T.H. from the earliest stages of preparation, rather than to some casual contamination (comparable to that which renders only some of the preparations pyrogenic). One such material is the hormone of the posterior lobe of the pituitary gland, which was known to be present in small amounts in every batch. The stated activity ranged from 0·5 to 1·5 units of oxytocic activity per 100 units of A.C.T.H.

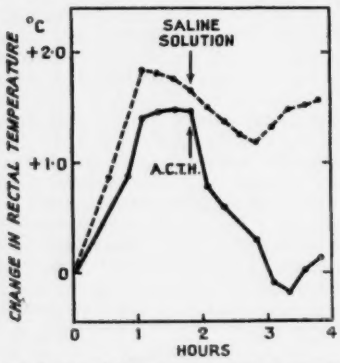

Fig. 5—Pyrexial responses to proteus pyrogen 1 μg. per kg. of body-weight, with and without the injection of A.C.T.H. 2 hours after injection of pyrogen (cross-over test, 2 rabbits, results averaged).

We have therefore compared the effects of A.C.T.H. on the body-temperature with those of a posterior-pituitary preparation. In fig. 6 are shown the results of an experiment in which, in two animals, posterior-pituitary extract 0·015 unit per kg. of body-weight was first injected intravenously, without significant effect on the body-temperature; 3 hours later, A.C.T.H. (batch 4) 1 unit per kg. of body-weight was injected, giving the usual vigorous hypothermic response. The results of another experiment, using a cross-over method on two animals, and a higher dose of posterior pituitary (0·1 unit per kg. of body-weight) are shown in fig. 7. Even this large dose of posterior-pituitary extract did not lower the body-temperature, although both animals responded to A.C.T.H. in the usual way.

Just as the presence of small amounts of posterior-pituitary hormone cannot explain the hypothermic actions of the A.C.T.H. preparations, so does it fail to explain the antipyretic effects. In fig. 8 is shown a comparison in a cross-over test on two animals between the effects of A.C.T.H. 1 unit per kg. of body-weight and of posterior-pituitary hormone 0·1 unit per kg. of body-weight on the pyrexia produced by the proteus pyrogen. The course of the pyrexia is hardly influenced at all by the posterior-pituitary hormone, whereas A.C.T.H. in the same animals produced its usual effect.

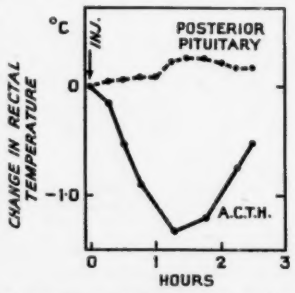

Fig. 7—Responses in 2 normal rabbits to posterior-pituitary extract 0·1 unit per kg. of body-weight and to A.C.T.H., batch 4, 1 unit per kg. of body-weight (cross-over test, results averaged).

DISCUSSION

Our experiments have shown that preparations of A.C.T.H. will lower the body-temperature of normal rabbits, will delay and reduce the pyrexial response of rabbits to a dose of pyrogen, and will reduce an established pyrexia. This action is not due to contamination with posterior-pituitary hormone. An antipyretic action of A.C.T.H. has already been reported (Kass and Finland 1950), but the hypothermic action does not seem to have been recorded. Cortisone, given for several days previously, is known to reduce the sensitivity of rabbits to a pyrogen (Recant et al. 1950).

The importance of these observations for the testing for freedom from pyrogens is obvious. The usual pyrogen

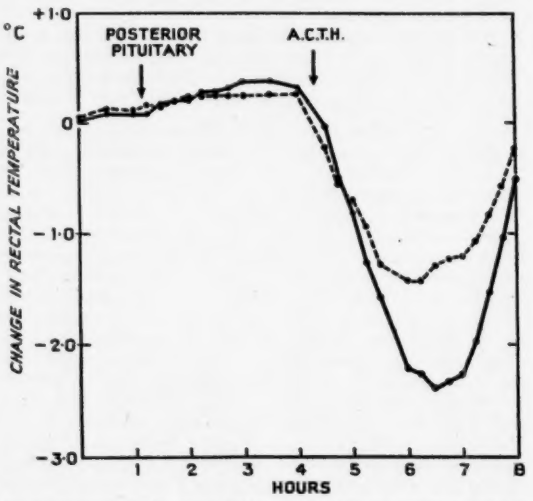

Fig. 6—Responses in 2 normal rabbits: *a*, to posterior-pituitary extract 0·015 unit per kg. of body-weight; *b*, 3 hours later, A.C.T.H., batch 4, 1 unit per kg. of body-weight.

test (British Pharmacopœia 1948) ends 3 hours after the test material has been injected. The ability of A.C.T.H. preparations to delay the appearance of a pyrogenic response means that a longer test period, preferably 5 hours, must be used. The difficulties of interpreting the results of such a test, in which what is essentially a mixture of drugs of opposing actions is injected, need no emphasis; this problem can hardly be discussed, however, in the absence of decisive information about the sensitivity of man to such mixtures and about the dose-response characteristics of these substances in man.

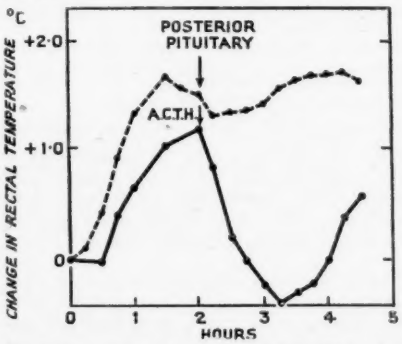

Fig. 8—Responses in 2 rabbits treated with proteus pyrogen 1 µg. per kg. of body-weight to: *a*, posterior-pituitary extract 0·015 unit per kg. of body-weight; and *b*, A.C.T.H. 1 unit per kg. of body-weight (cross-over test, results averaged).

But the existence of this hypothermic and antipyrexial action of A.C.T.H. preparations has considerably wider significance than for the control of purity of a drug. It suggests that the pituitary may, under some conditions, play some part in the normal physiology of temperature regulation. In addition, the effects on body-temperature are displayed by doses comparable to those used clinically in man, and the possibility arises that the extensive metabolic or vascular readjustments involved in bringing about such considerable falls in temperature, or the fall in temperature itself, may be of therapeutic importance. The effects of A.C.T.H. preparations in a given disease might in part be due, therefore, not to a specific action on the disease but rather indirectly to such vascular or metabolic changes.

SUMMARY

Preparations of A.C.T.H. cause a fall in the rectal temperature of normal (unanæsthetised) rabbits. The fall in temperature is about 1°C (range 0·24°–1·97°C) with a dose of 1 unit per kg. of body-weight, reaches its lowest point in 1–2 hours, and passes off in about 3 hours.

A.C.T.H. preparations, given simultaneously with a pyrogen, will delay and reduce the pyrexial response to the pyrogen. Given after pyrexia has been established, A.C.T.H. preparations will temporarily lower the temperature to normal or below.

The hypothermic and antipyretic actions of A.C.T.H. preparations were displayed by all samples tested, and were not due to contamination with posterior-pituitary hormone.

The significance of these actions in routine pyrogen testing of A.C.T.H. preparations and in relation to physiological processes involved in temperature regulation is discussed.

We are deeply indebted to Mr. C. Pergande for his help in these experiments.

REFERENCES

British Pharmacopœia (1948) London; p. 402.
Burn, J. H. (1937) Biological Standardization. London.
Kass, E. H., Finland, M. (1950) *New Engl. J. Med.* **243**, 693.
Recant, L., Ott, W. H., Fischel, E. E. (1950) *Proc. Soc. exp. Biol., N.Y.* **75**, 264.

EFFECT OF PROCAINE PENICILLIN AND BREATHING EXERCISES IN POSTOPERATIVE PULMONARY COMPLICATIONS

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POSTOPERATIVE pulmonary complications still occur despite advances in surgery, in anæsthesia, and in the use of antibiotics.

Penicillin might be expected to lower the frequency and diminish the severity of such complications if the presence of penicillin-sensitive organisms in the respiratory tract is an important factor. Whipple (1918) and Cleveland (1919) found a pneumococcus type IV to be the common causative organism in postoperative pneumonitis; but, although the upper respiratory tract may be sterilised by the inhalation of penicillin before operation, this method will not by itself prevent pulmonary complications (Holborrow and Spriggs 1948).

Coryllos (1930) showed that obstruction of the bronchial lumen with secretion is the cause of postoperative pulmonary atelectasis. Collapse is most likely during the first twenty-four hours after operation (Stringer 1947), when there may be many difficulties in the removal of secretion—namely, inhibition of coughing by pain, depression of the cough reflex by postoperative analgesics, viscid sputum, and bronchial spasm (De Takats et al. 1942). Breathing exercises are given to prevent the accumulation of sputum in the lungs and to help expectoration.

This paper is a report on the effect of penicillin and breathing exercises in preventing postoperative pulmonary complications.

METHOD OF INVESTIGATION

An unselected, consecutive series of 160 men admitted for repair of inguinal hernia was divided into four groups using tables of random numbers (Fisher and Yates 1938). These groups were treated as follows:

Group 1.—Procaine penicillin 600,000 units intramuscularly before operation in two divided doses; 300,000 units daily for five days after operation.

Group 2.—Procaine penicillin (as in group 1). Breathing exercises (diaphragmatic, lower costal, and posterior basal) twice daily for five days, starting forty-eight hours before the operation.

Group 3.—Breathing exercises as in group 2.

Group 4.—No treatment.

Many factors predispose to postoperative pulmonary complications—including smoking (Morton 1944), bronchitis, and old age—and these we shall discuss in another paper. In the present study we have relied upon the random allotment of patients to ensure equal distribution of these factors among the groups (see table I).

TABLE I—DISTRIBUTION OF SMOKERS AND BRONCHITICS

Group and no. in group	Average age	No. of smokers	No. with bronchitis
1 (40)	46 (S.D. 12)	31 (77·5%)	16 (40%)
2 (38)	48 (S.D. 14)	28 (73·7%)	12 (31·6%)
3 (40)	46 (S.D. 15)	28 (70%)	15 (37·5%)	
4 (42)	45 (S.D. 14)	28 (66·7%)	18 (42·9%)
		$\chi^2 = 1·155$ $n = 3$ $\therefore p > 0·7$ (not significant)	$\chi^2 = 0·496$ $n = 3$ $\therefore p > 0·9$ (not significant)

Each case was examined clinically before operation and thereafter daily. X-ray films of the chest were taken on admission and—by means of portable apparatus—after operation. Patients were considered to have a pulmonary complication when the postoperative chest film showed a definite abnormality of the lung which did not appear in the original film. No case of pulmonary infarction was seen in this series.

Table II shows that the difference between the groups could reasonably have arisen by chance. This series therefore provides no evidence that procaine penicillin

TABLE II—INCIDENCE OF COMPLICATIONS

Group	No. *with* postoperative pulmonary complication	No. *without* postoperative pulmonary complication
1	6	34
2	7	31
3	8	32
4	5	37

$\chi^2 = 1{\cdot}334$
$n = 3$
$\therefore p > 0{\cdot}7$ (not significant).

and breathing exercises, either singly or in combination, reduce the risk of postoperative pulmonary complications. The duration of productive cough and a fever of 100°F or more is shown in table III. These are crude measurements to the nearest half-day, but they indicate that the severity of the complication was not diminished by treatment.

Work now in progress suggests that, if the obstacles to expectoration can be overcome, postoperative infection or collapse will seldom follow. We think that breathing

TABLE III—DURATION OF POSTOPERATIVE SYMPTOMS

Group	Duration of symptoms (days)		
	Fever	Cough	Sputum
1	2·5 (S.D. 1·4)	4·0 (S.D. 1·6)	5·0 (S.D. 1·6)
2	2·0 (S.D. 1·3)	3·0 (S.D. 1·1)	4·0 (S.D. 1·3)
3	1·5 (S.D. 1·1)	4·0 (S.D. 1·1)	4·0 (S.D. 1·3)
4	1·5 (S.D. 1·1)	3·0 (S.D. 1·8)	4·0 (S.D. 1·5)

exercises and penicillin fail because the exercises do not help to bring up the sputum and the penicillin does not stop its production.

SUMMARY

Procaine penicillin and breathing exercises before and after operation did not significantly reduce the incidence of postoperative pulmonary complications in 160 consecutive cases of inguinal hernia.

We wish to thank the members of the research grants committee of the Middlesex Hospital, and the surgeons, anæsthetists, and members of the department of physical medicine for their coöperation; Dr. C. G. Whiteside for his reports on the X-ray films; the records officer and his staff for their assistance; and Prof. Alan Kekwick for much help and advice.

REFERENCES

Cleveland, M. (1919) *Surg. Gynec. Obstet.* **28**, 282.
Coryllos, P. N. (1930) *Ibid*, **50**, 795.
De Takats, G., Fenn, G. K., Jenkinson, E. L. (1942) *J. Amer. med. Ass.* **120**, 686.
Fisher, R. A., Yates, F. (1938) Statistical Tables for Biological, Agricultural, and Medical Research. London and Edinburgh.
Holborrow, E. J., Spriggs, E. A. (1948) *Lancet*, ii, 688.
Morton, H. J. V. (1944) *Ibid*, i, 368.
Stringer, P. (1947) *Ibid*, i, 289.
Whipple, A. O. (1918) *Surg. Gynec. Obstet.* **26**, 29.

A CASE OF SCLERODERMA

FAILURE TO RESPOND TO RECENT DRUGS

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WORKERS who investigate a new drug and find it useful are likely to publish their results; but those who try a new drug without success may be disinclined to report their findings. This paper records the complete failure of three recommended drugs in a severe case of scleroderma.

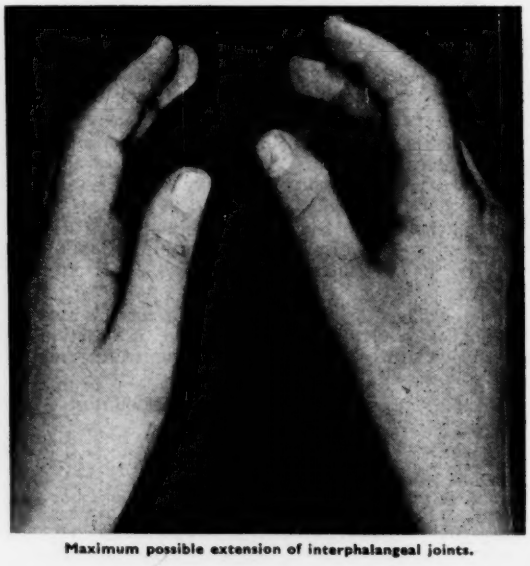
Zarafonetis (1949) treated 4 cases of scleroderma with derivatives of *p*-aminobenzoic acid (P.A.B.A.) and recorded striking benefit. Rennie et al. (1951) used 4-3-hydroxy-2-phenyl-cinchoninic acid (H.P.C.) in 3 cases of scleroderma with considerable clinical and histological improvement. Bayles et al. (1950), and others, have had some success with adrenocorticotropic hormone (A.C.T.H.). The following is an account of our experience with these remedies in a girl aged 13.

PATIENT'S HISTORY AND CONDITION

The girl was well until the age of 10, when her mother noticed that she was becoming progressively slower in all her activities. The first difficulty was with fine manipulative movements. Soon there was difficulty in running and then in walking. Within 6 months she was unable to walk more than a few steps, stoop, pick things up, or rise from the lying position; in about another month she became bed-ridden. A period of weeks in bed produced some improvement, but severe disability remained and was increasing again when she was first admitted to hospital at the age of 13.

She was a well-built girl with typical sclerodermatous changes over the shins, forearms, knees, hands, and feet. The skin of the terminal phalanges was thickened, pale, and shiny, and over the bony prominences of the wrist, elbow, and knee, and in many other sites, it was bound down to the underlying bone. There was obvious thickening of the skin of the limbs.

Movement was limited in the interphalangeal joints of the hands (see figure), and in the ankle, elbow, knee, and hip joints. Contractures were already present in the 4th and 5th fingers of the right hand, the 5th finger of the left hand, and both



Maximum possible extension of interphalangeal joints.

elbows. She could not bend down, take off her shoes, pick up objects from the floor, or rise from her bed. Before treatment her movements were recorded by cinematograph.

Special Investigations.—X-ray examination showed some osteoporosis of all bones. The erythrocyte-sedimentation rate was normal (9 mm. in 1 hour). Blood-urea 21 mg., blood-creatinine 0·6 mg., urinary creatinine 172 mg., urinary creatine 199 mg. per 100 ml., urea-clearance 85% of normal, urinary 17-ketosteroids 3·3 mg. excreted in 24 hours.

TREATMENT

Sodium *p*-aminobenzoate was started in doses of 33·3 mg. per lb. body-weight per day. She was given 1 g. three times a day for 4 days, and then 1 g. four times daily. The course lasted for 35 days and no toxic reactions were observed; but she was if anything slightly worse after treatment.

On readmission a year later her disability had increased and there was further limitation of movement. A course of A.C.T.H. (Armour) was started. She received 1·2 g. over a period of 35 days. On the first day she received a total of 120 mg. in 4-hourly doses, and on the second day 80 mg. She was then given 40 mg. daily for the next 16 days, and thereafter 20 mg. daily. The batch of A.C.T.H. used was known to be effective, but there was no response to treatment.

A course of H.P.C. was then given. She had 1 g. daily divided into 4 doses, for 21 days. There were no toxic symptoms. Neither at this time nor subsequently was there any improvement; in fact her condition has slowly deteriorated.

There was no response at all to any of the three drugs used. The condition was admittedly advanced when the drugs were used, but Rennie et al. (1951) thought that H.P.C. might be of more value in such cases than in early ones.

SUMMARY

A girl aged 13, suffering from scleroderma, was treated with sodium *p*-aminobenzoate (P.A.B.A.), adrenocorticotropic hormone (A.C.T.H.), and 4-3-hydroxy-2-phenylcinchoninic acid (H.P.C.). There was absolutely no response to treatment, slow deterioration occurring throughout.

REFERENCES

Bayles, T. B., Stout, C. F., Stillman, J. S., Laver, W. (1950) Proceedings of First Clinical A.C.T.H. Conference. Philadelphia; p. 447.
Rennie, J. B., Milne, J. A., Somerville, J. (1951) *Brit. med. J.* **1**, 383.
Zarafonetis, C. J. D. (1949) *Ann. intern. Med.* **30**, 1188.

TERRAMYCIN IN THE PROPHYLAXIS OF OPHTHALMIA NEONATORUM *

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AT the beginning of 1951 a small quantity of terramycin became available through the Antibiotics Clinical Trials Committee of the Medical Research Council and it was decided to assess its value in the prophylaxis of ophthalmia neonatorum.

METHOD

The trial was divided into two parts, testing (*a*) eye-drops and (*b*) ointment.

The eye-drops were made up by adding 25 mg. of crystalline terramycin hydrochloride to 62·5 mg. of sodium chloride and 25 mg. of crystalline sodium borate already sterilised for one hour at 150°C in a 10 c.cm. McCartney bottle. The bottles were stored in the refrigerator until required. For actual use the contents were mixed with 5 ml. of sterile distilled water, making a strength of 5 mg. per 100 ml. Once dissolved the solutions were discarded after forty-eight hours.

* A report to the Antibiotics Clinical Trials (non-tuberculous conditions) Committee of the Medical Research Council.

TABLE I—RESULTS OF PROPHYLAXIS BY TERRAMYCIN

Method and group	Sex	Total	Cases of ophthalmia	Difference (%)	Standard error (%)
Drops:					
Treated ..	M	254	7 (2·9%)	1·1	1·72
Controls ..	F	264	10 (4·0%)		
Ointment:					
Treated ..	M	270	12 (4·5%)	2·5	2·1
Controls ..	F	259	18 (7·0%)		

The difference between treated and untreated cases is not significant in either group.

The *ointment* was dispensed, as suggested by the makers, in a strength of 1 mg. per 100 g. in a sterile petrolatum base in eye-ointment tubes. These were made up as required and stored in the refrigerator when not in use.

Female infants were used as controls, the eyelids being wiped gently with small dry sterile squares of white lint immediately after birth. In males the eyelids were similarly cleaned, and two drops of the terramycin solution or about 30 mg. of terramycin ointment was then instilled into each conjunctival sac.

RESULTS

Ophthalmia was defined as a definite purulent conjunctivitis. Transient watery discharge or crusting were uncommon and were not included. The results were substantially the same for the treated and the control groups (table I).

DISCUSSION

With the antibiotics now available ophthalmia neonatorum is no longer difficult to treat, and gonococcal infection is today very rare in maternity units in this country. Nevertheless, ophthalmia neonatorum is still a considerable nuisance. In the first place, it is the commonest form of neonatal minor sepsis; and secondly, it usually starts in the later days of the lying-in period and may delay the mother's and baby's return home. Any attempt therefore to reduce the incidence by prophylactic measures is worth while.

TABLE II—OBSERVATIONS ON ALL CASES OF OPHTHALMIA NEONATORUM AT HAMMERSMITH HOSPITAL IN THE YEARS 1947–51

Year	No. of births	Prophylaxis	Incidence of ophthalmia (%)
1947	2257	Penicillin drops	1·5
1948	2088	Penicillin drops	4·4
1949	1907	Nil	1·8
1950	1850	Saline drops	6·0
1951*	1287	Saline drops; then terramycin trial	5·7

* Up to Oct. 31.

Table II shows the number of cases at Hammersmith Hospital during the five years 1947–51 as noted by successive resident paediatric registrars who were responsible for examining all the infants.

During these five years there has been no major alteration in the care of the infants, and bacteriological control of the staff and the strictest possible isolation of the most trivial infection has been constantly practised; but in assessing the value of the various prophylactic measures, it is not entirely permissible to compare one year with another, for there are many other variables. Taken with the terramycin trial, however, the results seem to justify the claim that simple cleaning of the eyelids, besides being easier, is at least as effective as any other method. In respect of silver nitrate this conclusion was reached by Taylor and Calman (1948). It would seem, too, that the way to reduce the incidence of ophthalmia neonatorum and other infections in the newborn is along other lines, as suggested by Watkins (1952).

CONCLUSIONS

Terramycin is of no value in the prevention of ophthalmia neonatorum.

It is confirmed that simple cleaning of the eyelids is as effective as any other form of topical prophylaxis.

I wish to thank Prof. A. A. Moncrieff for his advice and for permission to instigate this trial on infants under his care, and Miss M. C. Tweddle and her nursing staff in the department of obstetrics for the punctilious way in which they carried out all treatments.

REFERENCES

Taylor, M. D., Calman, R. M. (1948) *J. Obstet Gynæc.* **55**, 642.
Watkins, A. G. (1952) *Proc. R. Soc. Med.* **45** (in the press).

Reviews of Books

Tumeurs malignes de la vessie

Traitement par la radiumtherapie à vessie ouverte. RAYMOND DARGET, professeur de clinique urologique à la Faculté de Médecine de Bordeaux. Paris: Masson. 1951. Pp. 105. Fr. 1200.

THIS little book describes the treatment of cancer of the bladder from the viewpoint of the genito-urinary surgeon. A discussion of the lymphatics of the bladder is followed by a satisfactory and well-illustrated account of the types of tumour found in the organ, and by a description of various methods of cystography with the ordinary opaque media, air, and a special medium by means of which the tumour is outlined with an opaque layer. Some excellent radiographs show that this new method offers greater accuracy in radiographic diagnosis. There are also some first-class pictures obtained by perivesical injection of air or oxygen. An unusual technique is the use of a balloon, containing lead nitrate, to protect the healthy part of the bladder during treatment with radium needles. The great risk of this treatment is infection, leading to acute cystitis, but the new antibiotics have reduced the danger of this complication. The operation is carefully described. After special preparation the bladder is opened with a diathermy knife; the tumour is inspected and its limit defined, and it is then levelled until all papillomatous growth has been removed and the base of the tumour can be seen. The radium needles are next implanted in the bladder wall, diathermy being used to sterilise each track. The protective balloon is inserted and the bladder closed on a Marion tube. When the incision has been sutured the balloon is filled with a saturated solution of lead nitrate. After a week the balloon and needles are removed, but drainage continues and the cystotomy is kept open for about a month for regular washing out of the bladder. In some cases the balloon is used as a surface applicator carrying needles against the tumour, and some ingenious applicators have been devised to hold radium in the ureters. Unfortunately the questions of dosage and dose distribution are completely ignored—a strange omission in an otherwise interesting account of an original method of treatment.

Documenta Ophthalmologica

Secretary of the board of editors: JEAN NORDMANN. Vol. v–vi. The Hague: Uitgeverij Dr. W. Junk. 1951. Pp. 585. Dutch guilders 72.

THIS double volume of *Documenta Ophthalmologica* is dedicated to the memory of F. P. Fischer, one of its founders and editors. His extensive and fundamental contributions to ophthalmology are shown in the list of publications and in the tributes by the contributors.

It opens with a characteristic contribution from Fischer on cyst and cystoid degeneration of the retina. His experimental studies suggests that choroidal sclerosis, with obliteration of perivascular fluid spaces, is the underlying cause of the accumulation of fluid. Ocular pathology is represented by the papers of Friedenwald on metaplasia of conjunctival and corneal epithelium, Nordmann and Brini on melanomata of the choroid, and Koch on the fate of gases in ocular tissues. Tschermak-Seyssenegg on polarisation of daylight, Burian on stereopsis, Goldmann on the flow of aqueous, and Ascher on terminology of aqueous veins, are all useful contributions to ocular physiology. Problems of protein chemistry of the eye are discussed by Schaeffer, while Fischer and Nordheim deal with the sugar-content of subretinal fluid. Genetic studies are contributed by Brückner in a detailed account of slit-lamp ophthalmoscopic appearances of the eye of the rat and the mouse, whilst Sorsby, Roberts, and Brain give an account of essential shrinking of the conjunctiva in two sisters. Other contributions to this volume maintain the same high level of academic and clinical research.

Progress in Neurology and Psychiatry

An Annual Review. Vol. VI. Editor: E. A. SPIEGEL, M.D., professor and head of department of experimental neurology, Temple University School of Medicine, Philadelphia, Pennsylvania. New York: Grune & Stratton. 1951. Pp. 562. $10.

As in previous years, neurologists are given more space and use it better than psychiatrists. Neurologists and psychiatrists alike, however, tend to offer piles of abstracts, in which the sun shines indifferently on just and unjust, good and bad, when the reader would prefer a critical review. Least guilty of this mechanical sin are those responsible for the chapters on basic sciences, and writers like H. Teuber and Morris Bender on neuro-ophthalmology, or A. S. Marrazzi and Ross Hart on pharmacology, who are thoroughly at home in their subject. At the other extreme are the contributors on child psychiatry, who lavish such adjectives as outstanding, inspired, magnificent, and brilliant, and those on mental hygiene, who retail platitudes, programmes, and conference meetings. It is difficult to account for the absence of psychology from the basic sciences, though the enormous output under this head would make it imperative to select drastically the valuable and relevant papers. An index of authors, as well as of subjects, would add to the usefulness of the review, which, in spite of the infirmities incident to yearbooks, renders a considerable service to neurologists and psychiatrists.

Clinical Practice in Infectious Diseases *for Students, Practitioners, and Medical Officers.* (4th ed. Edinburgh: E. & S. Livingstone. 1951. Pp. 717. 30*s*.) The fourth edition of this well-known textbook follows the general plan of the last. Dr. E. H. R. Harries, Dr. Maurice Mitman, and Dr. Ian Taylor have been busy revising, extending, and bringing up to date, and have added several new illustrations, some of them in colour. Of the revised sections, that on the rickettsial diseases, including an account of Q fever by Dr. E. H. Derrick, is particularly good. The chapters on epidemiology and the management of infectious diseases continue to be outstanding, though there are many items of clinical interest and importance which need further revision. Thus acute laryngo-tracheo-bronchitis of children, a dangerous and not rare disease, deserves more than a passing footnote; and the administration of sulphonamides by the nasal tube to unconscious cerebrospinal-fever patients has been replaced by intramuscular injection of a sulphathiazole derivative. Again, the frequency and importance of pulmonary collapse in whooping-cough deserves more space, while the intradermal tests advised for the detection of hypersensitiveness to serum hardly present a true picture of the practice in the majority of our fever and general hospitals. On the other hand, it is pleasant to read a correct definition of the Schick-test dose, a short but informative account of canicola fever, and some just if caustic remarks on the Kenny concept of poliomyelitis. For the medical student new to fevers, the array of facts and references may prove forbidding, and he may find the text difficult in places. But for the specialist in infectious diseases, the epidemiologist, the medical officer of a fever hospital or of a public-health department, and for the inquiring practitioner, the book will continue to be a valued companion.

Semiologia y Psicopatologia de los Procesos de la Esfera Intelectual (Buenos Aires: El Ateneo. 1951. Pp. 318).—The contents of this book have been presented for the last seven years in Dr. Carlos R. Pereyra's postgraduate lectures in Buenos Aires. He casts his net wide, and deals with hallucinations, illusions, disorders of attention, memory, imagery, and thought, as well as intelligence. His treatment of these subjects is much influenced by French writers, but shows little contact with recent psychological research.

KING GEORGE VI AND PRINCE CHARLES
November 14, 1951

THE LANCET
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From Generation to Generation

THE KING's life had the happy ending he had so well earned. Last summer he was gravely ill with an obstructive bronchial lesion causing toxæmia. But the pneumonectomy performed on Sept. 23 brought immediate relief by removing the infection, and his recovery from the operation was so straightforward that he did not think it as serious as it really was. When he was seen by some of his doctors for the last time at the end of January, the condition of his chest was, so far as could be judged, entirely satisfactory; and he felt so well as to express his thankfulness that his daughter would, after all, be spared for a time the burden of sovereignty. Unhappily there remained the danger of death from arterial disease, which had been so much in the minds of his advisers in the previous three years. The sympathectomy and other measures undertaken in March, 1949, to improve the circulation of his lower limbs had left THE KING unexpectedly capable of activity; and his last day was spent enjoyably in shooting over the Sandringham fields and woods. But no precaution can remove the risks associated with advanced arteriosclerosis; and during the night of Feb. 5–6, without warning symptoms and apparently without awakening, he died of coronary thrombosis.

The work of a king, as of an artist, may not be fully or justly appreciated in his lifetime: we too seldom think of the worth of things or people before we lose them. But in the past few years the nations of the Commonwealth had become more and more consciously aware that KING GEORGE VI was playing almost faultlessly his great and difficult part in their affairs. The special merit and the special appeal of this achievement lay in its peculiar difficulty for him. The young man to whom public conversation was an ordeal, and who hesitated in his public utterances, was suddenly called to assume a somewhat shaken throne and the titular headship of an Empire entering the period of its greatest danger. The strain thus imposed on body and mind was intense; but THE KING's courage and will, reinforced by those of his wife, were equal to his task, and he never failed in his duty. Lacking the easy charm of some of the House of Windsor, his triumph was mainly one of character, and it came slowly. But today, looking back over the fifteen years of upheaval, one wonders whether any other kind of king could have been more useful than this modest steadfast man who did so much by quiet example. He became, indeed, the true pattern of a constitutional monarch; and a measure of his achievement is the fact that, though his reign has seen a social revolution and the relinquishing of empire, he leaves his throne far firmer, and even more important, than it was when he ascended it.

To those who recall the intellectual and political climate of the early part of the century it may well seem strange that the Monarchy in this country should not only have survived but still be gaining in significance. Yet it is clearly doing so. The proclamation of QUEEN ELIZABETH gives her the new title of Head of the Commonwealth; and today it is the Crown, almost alone, that holds together a great group of self-governing peoples of various race. More surprisingly, our Royal Family form a bond with a great many people in other countries who have come to share our interest in them. Neither of these things could have happened had our Chief Citizen been an elected and impermanent person, without the touch of divinity that still hedges a king of ancient lineage. To people abroad as well as at home, the British Crown, in its simplicity and its splendour, is something that goes on from generation to generation—a thread that leads the minds of children back through the history of their country and helps to give continuity to the national life. A nation, like an individual, has to adjust its present and its future to its past; and the more rapid our social changes the more value attaches to this continuing element in our Constitution. The inspired device by which the Head of our State is raised above political controversy has successfully adapted an ancient institution to a new age; and, though other systems of government may be more democratic, more modern, or more immediately efficient, none perhaps is so well designed to reconcile the requirements of representative government with the deep-seated desire of human groups to offer unquestioning loyalty to a leader. Following a cultural pattern established for many thousand years, human beings still feel the need to identify themselves, whether in joy or sorrow, with their chieftain and his family, and this need cannot be fully met by leaders whose tenure of office is temporary. The materialist or reformer may deplore such popular traits; but neither the statesman nor the anthropologist will make the mistake of supposing that emotions became unimportant when man began to reason, or that symbols have been an anachronism since the invention of the electric telegraph.

Those who seek to create a rational world have to contrive that emotions and symbols shall serve a useful, not a baneful, purpose; and the vital function we nowadays look to the Monarchy to perform is the preservation of a sense of unity among its subjects. When all share the same sovereign, his existence enables all his people, great or small, to regard themselves as members of one family of which he is the benevolent father. The unity thus engendered cannot be weighed or assessed, and it is very far from complete; but it is none the less real. And it was never more evident than in these days when the nation mourns a king worthy of its loyalty, and welcomes a successor of like spirit who already has a place in our hearts.

The Liver and Endocrine Dysfunction

THE liver has long been known to have complex and diverse functions; and it has lately been found to play a conspicuous part in endocrine control by inactivating hormones produced elsewhere in the body. Thus ZONDEK [1] showed that in vitro the liver inactivates 80–90% of added œstrogen, while ISRAEL et al.[2] found that the hormone was destroyed by perfusion through a heart-lung-liver preparation but not through a heart-lung preparation. BISKIND [3] implanted pellets of crystalline œstrogens and androgens into the spleens of castrated male and female rats. When the spleen was left in its normal anatomical relation to the liver no hormonal effect ensued; but when the spleen was transplanted from the portal to the systemic circulation the specific hormonal effects rapidly appeared. The chemical changes which these compounds undergo in the liver are still being studied. Most is known about the œstrogens. Some of these are excreted into the bile in an active form and are partly reabsorbed from the intestine, thus undergoing an enterohepatic circulation like the chemically related bile-acids.[4] Some oxidative degradation also occurs, and part is incorporated into an inactive lipoprotein complex which circulates in the blood. ROBERTS and SZEGO [5] have suggested that this inactive form in the blood is in equilibrium with an œstrogen glucuronide, from which the free œstrogen is liberated in the susceptible end-organs by the enzyme β-glucuronidase.

Clinical experience indicates that impaired hepatic function is commonly associated with endocrine imbalance, particularly of the sex hormones. As long ago as 1908, KELLY [6] reported menorrhagia and metrorrhagia early in the course of cirrhosis; and GLASS et al.[7] drew attention to the association of gynæcomastia and testicular atrophy with cirrhosis of the liver. Furthermore, other features of liver failure, such as palmar erythema and cutaneous spider nævi, are now regarded as evidence of hyperœstrinism.[8] Recognition of the importance of nutrition in maintaining the functional and structural integrity of the liver has led to a better understanding of the relation of the liver to steroid-hormone metabolism. BISKIND has drawn attention to the importance of the B vitamins, especially thiamine and riboflavine, in enabling the liver to maintain the normal balance between androgens and œstrogens. Thus, when castrated female rats with œstrone pellets in the spleen were maintained on an adequate diet they remained anœstrous; but when placed on a diet deficient in the B complex they went into continuous œstrus. Further studies by BISKIND and his collaborators showed that, in addition to thiamine and riboflavine, methionine was necessary for the normal hepatic control of these hormones. In contrast to the œstrogens, the hepatic inactivation of androgens, at least in rats, does not seem to depend on an adequate intake of B vitamins, since no evidence of androgenic activity appeared in BISKIND's animals with steroid implants in the spleen, whether the dietary level of these vitamins was normal or deficient. Experimental evidence has lately implicated other factors. FERRET [9] has reported that castrated female rats either on a necrogenic diet deficient in thioamino-acids and α-tocopherol, or on diets deficient in lipotropic factors, also lose the power to inactivate œstrogens implanted in the spleen, and hence go into continuous œstrus. This could be readily prevented by the addition of cystine, but not of α-tocopherol, to the necrogenic diet, and by the addition of choline to the alipotropic diet. Liver poisons, such as carbon tetrachloride, also impair this important hormone-controlling activity of the liver.[10]

Experimentally, therefore, the ability of the liver to inactivate œstrogens seems to be very sensitive to hepatotoxins and to deficiency of nutritional factors, and conceivably hormone imbalance could arise clinically in the same way. In a series of 450 cases studied by BISKIND, a striking correlation was indeed found between manifestations of nutritional deficiency and syndromes related to excess œstrogen. In women these manifestations include various menstrual disturbances, painful breast changes, and acne; and in men gynæcomastia, softening of the testes, loss of axillary hair, and decreased libido. In both sexes infertility may occur. Treatment with vitamin-B complex, especially in the form of desiccated whole liver, produced, in addition to the healing of the vitamin-deficiency lesions, rapid and dramatic improvement in the endocrine disturbances. Still more striking, perhaps, are the results described by LONG and SIMMONS.[11] Most of their patients were not obviously suffering from either liver disease or malnutrition, and the endocrine disturbance therefore appears to have been the primary complaint. Of the 35 patients in their series only 7 had a history of jaundice (presumably due to infective hepatitis) and 1 of severe alcoholism. In the remaining 27 cases, as far as can be inferred from the data in their paper, there was no reason to suspect impairment of hepatic function. Nevertheless, symptoms suggestive of hyperœstrinism, such as cyclic pain and tenderness of the breasts and dysmenorrhœa, were present and resisted the usual therapeutic measures. The response to a high-protein, low-fat diet richly supplemented with B vitamins and crude liver extract was in all cases good or excellent. In the 2 cases with overt liver disease that are reported in detail, the effect of this régime on the symptoms attributable to hormonal imbalance were truly impressive. It is a great pity, however, that a control series was not observed simultaneously.

That the part played by the liver in the metabolism of the steroid hormones is not confined to the sex hormones seems highly probable. There is already some evidence that deoxycortone and some of the naturally occurring corticoids are metabolised in the liver. DE ANDINO et al.,[12] using the thymic-weight test in mice, found that the minimal effective dose of

1. Zondek, B. *Lancet*, 1934, ii, 356.
2. Israel, S. L., Meranze, D. R., Johnston, C. G. *Amer. J. med. Sci.* 1937, **194**, 835.
3. Biskind, M. S. *In* Vitamins and Hormones. New York, 1946; vol. 4, p. 147.
4. Cantarow, A., Paschkis, K. E., Rakoff, A. E., Hansen, L. P. *Endocrinol.* 1943, **33**, 309.
5. Roberts, S., Szego, C. M. *Ibid*, 1946, **39**, 183.
6. Kelly, A. O. J. *In* Osler's Modern Medicine. London, 1908; vol. 5, p. 775.
7. Glass, S. J., Edmondson, H. A., Soll, S. N. *Endocrinol.* 1940, **27**, 749; *J. clin. Endocrinol.* 1944, **4**, 54.
8. Bean, W. B. *Amer. Heart J.* 1943, **25**, 463.
9. Ferret, P. *Brit. J. exp. Path.* 1950, **31**, 590.
10. Talbot, N. B. *Endocrinol.* 1939, **25**, 601.
11. Long, R. S., Simmons, E. E. *Arch. intern. Med.* 1951, **88**, 762.
12. de Andino, A. M. jun., Rivero-Fontan, J. L., Paschkis, K. E. *Proc. Soc. exp. Biol., N.Y.* 1951, **77**, 700.

cortisone is fifteen times higher by the oral than by the subcutaneous route. This is, of course, at variance with recent clinical experience; but, as these workers point out, the inactivating capacity of the liver may be easily saturated, and consequently with large doses no significant difference would be detectable between the different routes of administration. Nevertheless, within the physiological range, this function of the liver may be of great importance. It seems highly probable that the intrahepatic metabolism of steroid hormones is not confined to sex hormones and is of significance in the whole realm of endocrinology.

Hunger and the Land

How many people can the land support? Was MALTHUS right when he propounded the thesis that mankind by an inexorable nemesis outgrows his own food-supply? Are hunger and starvation therefore inevitable? This is now a fruitful theme for debate. The neo-Malthusians have recently found a doughty supporter for their pessimistic philosophy in WILLIAM VOGT, whose book *Road to Survival* has been a best-seller. They have also found some support from the official records of the Food and Agriculture Organisation of the United Nations,[1] which show that at the moment, despite the potentialities of agricultural science, increase in agricultural production is not keeping pace with the growth of human population. A new opponent of MALTHUS has arisen, however, in Dr. JOSUÉ DE CASTRO,[2] director of the institute of nutrition in the University of Brazil, and chairman of the Executive Council of F.A.O. Appropriately this new champion of human optimism comes from a go-ahead country which is just beginning to develop her own immense latent resources for food-production.

DE CASTRO'S main thesis is that overpopulation itself does not cause starvation in various parts of the world, but that, paradoxically, starvation is the cause of overpopulation; and he points out that the populations of China, India, and Japan, though repeatedly assailed by starvation, continue to multiply. Experience has shown that it is difficult, if not impossible, to eliminate hunger by controlling the growth of population. It is possible, however, to reverse the process and control the growth of population by doing away with hunger; once a people is enabled to rise above the poverty level, the birth-rate always declines. DE CASTRO quotes the World Health Organisation as stating that some 300 million people, mostly peasant farmers, suffer regularly from malaria. If humanity should decide to put away malaria, as is technically possible, we could count on many million more hands producing food. A spectacular rise in food-production would ensue and a new demographic balance arise at a healthier level. To support this argument, DE CASTRO briefly reviews the story of famine in four continents. The main and fundamental causes of hunger and food shortages, he claims, are not natural catastrophes but unjust systems of land tenure, rapacious landlords, and colonial exploitation. To survey the complex stories of world famines in 162 pages is a bold effort; and naturally the critic can find much that is left unsaid. The impression is repeatedly given that the British Empire was run entirely by greedy and unscrupulous merchants. Even if it should be conceded that on balance the economic state of the colonial peoples improved little, on the credit side stands the immense benefits from the introduction of a widespread educational system and a just judiciary, which have proved of great value against poverty and starvation. Moreover it is, to say the least, unfair to a great man, who introduced many not altogether unsuccessful measures to mitigate famine in India, to dismiss WARREN HASTINGS in two sentences as a common criminal. Nevertheless, though brevity may not always make for accurate historical judgment, the main thesis that unjust systems of land tenure are at the root of most human hunger is probably correct. In modern times it is certain that the failures of the CHIANG KAI SHEK régime in China were associated with an inability to assist the peasant farmers in their struggle against hunger. The future successes or failures of Communism or democracy in Asia are less likely to be achieved by ideological battles, or by tanks and atomic bombs, than by practical results in agriculture. The peasants will inevitably fall into the political system which allows them to farm their land the more efficiently.

On the technical side DE CASTRO quotes the following figures: of the 56 million square miles of solid earth on our planet, 30% is covered with forest, 20% is grassy plains, 18% is mountainous, and 32% is torrid or polar desert. The 16,000 million acres of forest and arable land is available for cultivation; it is equivalent to 8 acres per head of our present world population. As yet the area cultivated is but 2000 million acres—an eighth of the earth's natural possibilities. Can this new land be brought under the plough? Professor NICOL[3] stated categorically last week that there are no more new lands; and he even questions our ability to maintain the fertility of those we already cultivate. DE CASTRO, in whose country the vast Amazon basin is almost unvisited by scientific man, would flatly deny this assertion. The future will decide between them. We should not underestimate the inventiveness of man; a group of British scientists[4] have recently indicated the possibilities of increased food-production by new technological developments. Today it would seem that the immediate limitations to our food-production are imposed not by any lack of agricultural knowledge but rather by political organisations which prevent the full exploitation of agricultural knowledge. Our fundamental food problems are political, not technological. Indeed Lord BOYD ORR, in a foreword to DE CASTRO'S book, points out that the title might be *Hunger and Politics*.

1. See *Lancet*, 1951, ii, 826.
2. de Castro, J. Geography of Hunger. With a foreword by Lord Boyd Orr. London: Gollancz. 1952. Pp. 288. 18s.
3. Nicol, H. *Lancet*, Feb. 9, 1952, p. 313.
4. Four Thousand Million Mouths. Edited by F. le Gros Clark and N. W. Pirie. London, 1951. See *Lancet*, 1951, ii, 1122.

The executive board of W.H.O., meeting in Geneva, has decided that Tunisia, Algeria, Morocco, and Greenland should be included in the European region, and Italian Somaliland in the Eastern Mediterranean region. Dr. Norman D. Begg (Scotland) has been sworn in as director of the regional office for Europe, and Dr. François Daubenton (Netherlands) as director of the regional office for Africa. The board is to meet again on May 29, after the fifth World Health Assembly, which will sit from May 5 to 24.

Annotations

GASTRO-INTESTINAL REACTIONS TO ANTIBIOTICS

IT is now well known that the antibiotics—particularly aureomycin, chloramphenicol, and terramycin—may produce lesions in the gastro-intestinal tract. Harris [1] found, in a series of 110 patients with brucellosis who were treated with aureomycin or chloramphenicol, that nearly two-thirds of the females and one-fifth of the males developed nausea, vomiting, epigastric discomfort, heartburn, or diarrhœa; and diarrhœa sometimes persisted for several weeks after treatment was stopped. Many of the female patients had oral complications, including vesiculopapular eruption on the mucous membrane of the palate, cheeks, pharynx, and lips, angular stomatitis, and glossitis. Commonly these were accompanied by vulval and anal irritation; and 2 patients had anal fissures with bleeding. Tomaszewski [2] noted oral complications in 39% of 126 patients treated with aureomycin and chloramphenicol for infective conditions; and he too found that many complained of anal and genital irritation sometimes associated with bleeding. Manheim,[3] of New York, has collected 100 cases in which anorectal complications followed about a fortnight after taking aureomycin, chloramphenicol, or terramycin. All these patients complained of perianal itching associated with pain, a burning sensation, and bleeding on defæcation; many of them also had diarrhœa which came on soon after taking the antibiotics. Examination revealed erythema, thickening, and excoriation of the skin in the perianal region, associated in some patients with multiple superficial fissures at the anal margin; in a few ulceration was observed in the rectum and colon.

Why antibiotics produce these complications is not clear. There is no doubt that, by eliminating a wide variety of sensitive bacteria, antibiotics cause a drastic change in the intestinal flora. This is evident from bacteriological examination of the stools of patients receiving aureomycin or chloramphenicol, and from the fact that the stools of these patients are often odourless. One result of bacterial destruction is interference with the normal production of the vitamin-B complex, which depends on bacterial synthesis; and since the oral lesions closely resemble those resulting from vitamin-B deficiency it was at first thought this was the most important causative factor. Both Harris and Tomaszewski found that such complications were less severe when patients were receiving vitamin B. On the other hand these complications occur even when patients are given adequate amounts of this vitamin parenterally, and so other factors must be at work.

Another possible result of eliminating sensitive bacteria is the proliferation of non-sensitive organisms. That this takes place is suggested by the finding [1 2 4] (to which we have already referred [5]) of fungi, particularly *Candida* (*Monilia*) *albicans* in oral and perianal scrapings from patients with lesions resulting from antibiotic therapy. This organism has also been isolated from the stools of patients with diarrhœa from the same cause. *C. albicans* is normally not pathogenic but might become so as a result of the abnormal conditions produced by the antibiotics. Possibly, as Harris suggests, the gastro-intestinal complications are produced by an overgrowth and increase in virulence of *C. albicans*, acting on a mucous membrane whose resistance has been reduced by vitamin-B deficiency. It is more than probable, however, that the alteration in the intestinal flora has other sequelæ which have not yet come to light, and which are also partly responsible.

These complications, though not usually serious, give rise to considerable inconvenience. Routine administration of vitamin-B complex would seem advisable in all patients receiving chloramphenicol, aureomycin, or terramycin. Harris found that the vitamin was more effective when giving parenterally, but administration by mouth suffices unless troublesome lesions have actually developed. The other measures so far tried consist in giving lactobacilli in various ways, in an attempt to restore the normal intestinal flora and diminish the growth of fungi. Willcox [6] has used yogurt, and Manheim observed a striking improvement of the anorectal complications after giving *Lactobacillus acidophilus* or buttermilk. A simpler method might be to give lactose, which is thought to encourage the growth of lactobacilli; and it would be interesting to try the effect of giving this sugar prophylactically to patients receiving antibiotics.

THE YOUNG MOTHER AT WORK

REARMAMENT and the introduction of a number of light industries have restored prosperity to Tyneside; but one continuing effect of past economic depression has been the growth of social inquiry. Last autumn the Northumberland and Tyneside Council of Social Service asked Sir James Spence, Nuffield professor of child health, to promote a conference on the subject of the young mother at work; and on Dec. 15 a group of delegates from a variety of local organisations came together. An industrialist, the head of a large family business in the city, a representative of the Ministry of Labour, a medical officer of health, a pædiatrician, and a grandmother who is also the vice-president of the International Union of Family Organisations, tried to present the facts as they find them in their daily work. It was a sensible conference, restrained and challenged by the imposing lack of factual answers to the obvious questions. How many mothers are working? What kind of work do they do? Why do they go out to work? Who looks after their children? What are the effects on the child, the "minder," and the mother herself?

The Ministry of Labour keeps records of married women in employment, but it has no knowledge of their family commitments. The medical officer of health knows the number of children attending day and residential nurseries (and the cost to the community); but in Newcastle, at least, these children are only a small fraction of those with mothers at work. The health visitor is aware of those mothers in her parish who are fully employed, but her contact is not always sufficiently frequent or intimate to cover the shorter periods of work which mothers undertake. A family survey of the kind that is being carried out in the university department of child health in Newcastle gives a more reliable index, while the national investigation of the Royal College of Obstetricians and Gynæcologists and the Population Investigation Committee will eventually give a picture for the whole country.

In 1950 a Ministry of Labour survey estimated that of 7 million employed women about 2,850,000 were married. Although the number of these with children under 14 years of age is unknown it cannot be much less than 1 million. Douglas,[7] in the first report of the national survey, found that 28% of married mothers and 75% of unmarried mothers were in full-time occupations at the beginning of a pregnancy which led to their confinement in the week of March 3–9, 1946. The majority gave up work by the middle of their pregnancy, and in those who continued to work there was a greater risk of premature delivery and stillbirth. Two months after delivery only 6% of the married primiparæ and 3% of the multiparæ said that they intended to return to work. In the next 4 years 24% of all the mothers were in paid employment at some time or another.[8] In the Newcastle survey, of

1. Harris, H. J. *J. Amer. med. Ass.* 1950, **142**, 161.
2. Tomaszewski, T. *Brit. med. J.* 1951, i, 388.
3. Manheim, S. D. *N.Y. St. J. Med.* 1951, **51**, 2759.
4. Woods, J. W., Manning, I. H., Patterson, C. N. *J. Amer. med. Ass.* 1951, **145**, 207.
5. *Lancet*, 1951, ii, 532.
6. Willcox, R. R. *Ibid*, p. 154.
7. Douglas, J. W. B. Maternity in Great Britain. London, 1948.
8. Douglas, J. W. B. Personal communication.

just over 1000 mothers with families containing an infant born in May or June, 1947, 7% went out to work in the first year, and 18% were working during 1951; and rather more than half of these were in full-time occupations. Analysis of motives is difficult; but economic need was, not unexpectedly, the main reason for working, and in only 18% of cases was there a deliberate choice of work for its own sake. Three-quarters of the children were looked after within the family circle while the mother was at work, with granny carrying the main share of the burden. Four out of five of these infants appeared to be growing and developing as well as those who were with their mothers at home. In the remainder, where development and behaviour were less satisfactory, the mother's going out to work was only one element in the general inadequacy or instability of the family. Happiness and sound emotional development are, however, less easy to measure than growth or infective illness.

This is still a minority problem; at least three-quarters of the mothers in this country stay at home with their young children. With the rising cost of living and the renewed demands of industry the proportion at work may be increasing; and it is disturbing that so many of the elementary facts necessary for deciding social policy in this matter are unknown. The Newcastle conference, with all its limitations, has served a useful purpose. Moreover, the pattern of the conference, which brought together public, local authority, and university, might well be followed for other subjects and in other places.

CARDIOLIPIN ANTIGENS

CARDIOLIPIN, a complex acid phospholipin containing no nitrogen, is the active principle contained in the tissue extracts used as antigens for the demonstration of syphilitic reagin. The isolation of this reagent from ox heart-muscle, by Mary Pangborn and her associates at the New York State Department of Health laboratory in 1942, caused great interest among those engaged in the serodiagnosis of syphilis. In 1943 a protective patent was effected in order to ensure the purity of cardiolipin manufactured in the U.S.A. The resulting supervisory work soon proved too much for the laboratory, and W.H.O. was requested to take over the international control of the reagent. The W.H.O. subcommittee on serology and laboratory aspects of venereal diseases [1] suggested that technical information on the isolation, purification, and standardisation of cardiolipin and lecithin should be made available to major laboratories all over the world; and W.H.O. aims to control cardiolipin by the establishment of international standards. The organisation's Expert Committees on Biological Standards and on the Unification of Pharmacopœias, together with the serological subcommittee, is now engaged on this work, and cardiolipin antigens of guaranteed chemical purity and tested serological activity should soon be obtainable by all laboratories which need them.

As part of this campaign, W.H.O. have issued a monograph,[2] by Pangborn and her associates, which should be of great help to all concerned with serology in venereal disease.

The first section deals with the preparation and the chemical examination of cardiolipin and lecithin; the various techniques are described in detail, but concisely. The second section deals with the serological examination of cardiolipin antigens used in the Wassermann reaction and the microscopic slide-test techniques of the New York State Department of Health; this part would have been of greater value if the methods used in arriving at the formulæ of the antigens had been described in detail. It is, however, noteworthy that statistical methods have been applied to the results of the serological examination of batches of antigen submitted for investigation as to suitability for use in routine tests. Here again, while a brief account is given of the direct probability sequential analysis, there is no guide to the reasons why certain limiting figures are adopted. No doubt these deficiencies will be remedied in further editions.

Cardiolipin antigens have been applied to innumerable Wassermann and precipitation techniques. It is possible, therefore, that W.H.O. will feel it desirable to issue short monographs describing the serological standardisation and use of cardiolipin antigens as applied to well-known and internationally accepted techniques of assessing these reactions. Most serologists agree that cardiolipin antigens are more sensitive and specific in the detection of syphilitic reagin than the ox-heart extract antigens generally used. Work in this country [3] seems to support this view, and now that cardiolipin is to be had more attention might be given to the merits of this reagent.

NUTRITIONAL SURVEYS

IN his Statistical Account of Scotland (1791–99) Sir John Sinclair aimed at portraying the living conditions of the Scottish people; and his description showed, among other things, that their dietary had vastly improved during the eighteenth century. Sir John's great-grandson, Dr. Hugh Sinclair, in giving his Cutter lecture on preventive medicine,[4] must have contemplated wistfully the confidence with which his ancestor took nutrition in his stride as one of many interests. Increased knowledge, improved technique, and the continuing search for accuracy bring with them a heavy sense of scientific responsibility.

Dr. Sinclair's lecture shows a deep knowledge of the history of his subject. His views are built out of ten years' intensive research with the Oxford Nutrition Survey, which was born in the critical days of early 1941. With the support of the central authorities and financial help from the Rockefeller Foundation the team began with family studies; they then coöperated with V. P. Sydenstricker in rapid clinical surveys consisting essentially in an inspection of skin, hair, tongue, and mucous membrane of the mouth, a slit-lamp examination of the cornea and scleral conjunctiva, and recording of certain data about the teeth. Sydenstricker's technique had been developed to meet conditions in certain southern States of the U.S.A., and it was valuable here in war-time because it reassured us that the grosser manifestations of malnutrition were absent. The Oxford unit also carried out large-scale analyses of blood-samples, obtained through the transfusion services, which gave a rough but useful gauge of the national trends in hæmoglobin, protein, vitamin-A, and ascorbic-acid levels. At the end of the war the unit turned its attention to European problems, studying the conditions resulting from acute famine in the Netherlands and chronic malnutrition in Germany.

Survey work of this kind, if it is to serve its administrative purpose of influencing food policy and bringing relief when and where it is most needed, must be carried through rapidly. During the war this aim was achieved by teams consisting of a clinician, a biochemist, a dietist, a technician, and a clerk; and a specially designed Hollerith punch-card was used. These methods, valuable as they were, are insufficient for peace-time research, and since the war there has been a great refinement in technique. Now the purpose of the survey is to define the cause, severity, and distribution of nutritional defects; and this can be accomplished only by the careful assessment of individuals. There are no short cuts. The search for cause must take account of the fact that deficiency of any of several nutrients can produce the same clinical signs, and of the more puzzling finding that combined lesions produced by combined deficiencies may

1. W.H.O. Technical Report Series, no. 33. Geneva and H.M. Stationery Office, 1951; p. 19.
2. Cardiolipin Antigens. By MARY C. PANGBORN, F. MALTANER, V. N. TOMPKINS, T. BEECHER, W. R. THOMPSON, and MARY R. FLYNN. W.H.O. Monograph Series, no. 6. Geneva and H.M. Stationery Office, 1951.
3. Price, I. N. O., Wilkinson, A. F. *Lancet*, 1950, i, 14.
4. Sinclair, H. M. *New Engl. J. Med.* 1951, **245**, 39.

be very different from the sum of the lesions ascribed to the individual deficiencies. The study of severity must also take into account duration of deficiency, since short errors are more easily corrected than those of long duration. In addition, the pitfalls of sampling are many, as the European survey showed:

"In one study in the Netherlands houses were chosen on a sound statistical basis and all occupants were asked to attend a clinic. Had the apparent refusals not been followed up, the worst cases of malnutriture would have been missed because no person was unwilling to attend but some were too ill to do so. When attending a committee in Germany I was shown the results of a nutritional survey in a certain town and was surprised at the gloomy picture presented. I was assured by the medical officer in charge that they were correct. I asked about the sampling and was shown the letter of instructions sent to the Oberburgermeister. I spoke to him, and he told me that as the army authorities were making a nutritional survey he supposed they would like to see cases of malnutrition, so he sent them as the sample those persons who were to be given extra rations on the grounds of malnutrition. In another town, I watched a street corner weight survey carried out by an allied sergeant with two GIs and a German interpreter with scales and measuring-rod at a busy street junction. Here nothing but the errors was random. The GIs selected the pretty girls, the interpreter (and the onlookers) discouraged fat Germans and pushed forward thin ones; the bright-eyed healthy streetwalkers came up to see what was going on and were weighed; the listless malnourished passed by on the other side; the worst were at home in bed."

In the second part of his lecture Dr. Sinclair considers the place of nutritional surveys in the university and in the field. Nutritional science, he holds, should be regarded as a branch of experimental science, and is fundamental in its application to man, or as supplemented by animal experiment; and its aim is to advance knowledge for its own sake. On the other hand, the application of scientific knowledge to man in his environment is important, but it is not a proper subject for a university. Between these two lies the field survey—for example, "to determine the needs of the population for health in terms of the more important nutrients." [5] The function of these surveys is useful to science, but limited in scope. A university institute of human nutrition is of course entitled to pursue any method that will further its research; but it is not to be bound by the survey method, which is essentially a function of the Ministry of Health and other public authorities.

PREGNANCY AND RHEUMATOID ARTHRITIS

ONE of the observations that led Hench and Kendall to predict that rheumatoid arthritis was not incurable was remission of the disease during pregnancy. In pregnancy some "substance X" in the blood must, they argued, cause the rheumatoid inflammation to abate; and in their search for this "substance X" cortisone was discovered. Kendall [6] believes that the two are identical or closely related. Nevertheless there are anomalies: active rheumatic fever, for example, occurs during pregnancy and may be notably severe [7]; yet the symptoms of this disease are alleviated by cortisone. On the other hand, Wolfson et al.[8] have reported a case where allergic symptoms were regularly abolished by pregnancy but were unaffected by cortisone.

In 1947 Barsi [9] claimed some success in imitating pregnancy remissions by transfusions of blood from pregnant women to rheumatoid arthritics. Lately Granirer [10] has described the successful use for this purpose of postpartum plasma—i.e., plasma from blood withdrawn from mothers twenty-four hours after delivery. This material, given in weekly doses of up to 250 ml., can, he claims, cause gradual and sustained, though not always complete, improvement. His patients gain weight and feel better; their arthritis subsides; and such abnormalities of the blood as anæmia and reversed albumin/globulin ratio return to normal. The sedimentation-rate, however, does not improve regularly—a fact which emphasises that this treatment is not equivalent to cortisone therapy. Moreover Granirer reports that seven patients refractory to cortisone have responded to postpartum plasma.

In an attempt to explain the action of postpartum plasma Granirer has assayed it for A.C.T.H. activity, by the Sayers adrenal ascorbic-acid depletion test. He has shown that it is active by this test; even after five weeks of storage at 5°C about one-third of the original A.C.T.H. activity remained. Control plasma from non-gravid women contained no A.C.T.H. This result presents us with a problem, for the remissions produced by postpartum plasma do not have all the features of those evoked by A.C.T.H.; and the doses of plasma given would be equivalent to about 0·5 mg. of A.C.T.H. per week. Moreover other workers, such as Parrott,[11] have found that the A.C.T.H. activity of drawn blood is normally very transient; its almost immediate breakdown can be prevented only by special precautions. Perhaps postpartum plasma contains a stable form of A.C.T.H., or possibly it contains a new factor which itself destroys the normal A.C.T.H.-removing mechanism, in the same way that acetylcholine is potentiated by anticholinesterases. If so, do these substances originate from the maternal or the fœtal pituitary gland, or are they elaborated by the placenta? Jailer and Knowlton [12] have reported the case of a woman with Addison's disease whose need for adrenal-cortical hormones decreased during pregnancy—presumably because of placental secretions. Can the placenta also produce A.C.T.H.?

ANTIBACTERIAL EFFECT OF COW'S MILK

THE antibacterial action of cow's milk was discovered in 1894, but at first little work was done on it. The antibacterial substance, which Jones [13] called "lactenin," was found to have a bacteriostatic rather than a bactericidal action; only the most sensitive of the test organisms, *Streptococcus pyogenes*, was actually killed, and then only when present in small numbers. *Streptococcus agalactiæ*, the organism causing bovine mastitis, was inhibited for a few hours, after which it multiplied rapidly. Jones found lactenin in the whey, where it could be concentrated by dialysis since it did not pass through semi-permeable membranes. An alcohol-precipitated active fraction was obtained from this concentrate, but was not chemically pure. No better method of concentration has yet been described.

Lactenin may be present in the milk when it is absent from the blood,[13 14] and presumably it is synthesised in the mammary gland. It withstands heating to 60°C for 20 minutes and is thus unlikely to be a serologically active compound. Similarly it is not an antibody. Human milk is rich in lysozyme, which may possibly account for most of its antibacterial activity; but lactenin is unlikely to be identical with lysozyme since only very little of the latter is found in cow's milk.[15] Jones thought that lactenin played a part in resistance of the mammary gland to infection; and Foley and Lee [16] tried to explain the sudden appearance of bovine mastitis in terms of the development of lactenin-resistant strains. Jones and others also suggested that lactenin helps to prevent milk-borne epidemics due to *Strep. pyogenes*. More recently, however, McEwen and White [17] have confirmed that lactenin occurs to about the same extent in udders with and without infection. Moreover,

5. U.N. Conference on Food and Agriculture. Hot Springs, 1943.
6. Kendall, E. C. See *Lancet*, 1951, ii, 586.
7. McKeown, E. F. *J. Obstet. Gynæc.* 1948, **55**, 50.
8. Wolfson, W. Q., Robinson, W. D., Duff, I. F. *J. clin. Endocrinol.* 1951, **11**, 793.
9. Barsi, I. *Brit. med. J.* 1947, ii, 252.
10. Granirer, L. W. *J. Amer. med. Ass.* 1951, **146**, 995.
11. Parrott, D. See *Lancet*, 1951, i, 1212.
12. Jailer, J. W., Knowlton, A. I. *J. clin. Invest.* 1950, **29**, 1430.
13. Jones, F. S. *J. exp. Med.* 1928, **47**, 877.
14. Chambers, W. H. *J. Bact.* 1920, **5**, 527.
15. Thompson, R. *Arch. Path.* 1940, **30**, 1096.
16. Foley, E. J., Lee, S. W. *Cornell Vet.* 1948, **38**, 367.
17. McEwen, A. D., White, M. B. *Vet. Rec.* 1950, **62**, 27.

when they produced an artificial mastitis by infusing cultures of *Strep. agalactiæ* the lactenin titre of the milk was not altered; and thus doubt was thrown on the hypothesis that lactenin accounts for the resistance of the udder to infection. The recent work of Wilson and Rosenblum [18] is therefore of special interest. These workers show that lactenin acts only in an aerobic medium, and that anaerobic conditions and the presence of reducing agents like cysteine and glutathione abolish its inhibitory action. Catalase has no "anti-lactenin" effect. They have further shown that milk removed from the udder by catheter is in a reduced condition, because it quickly decolorises methylene-blue. Wilson and Rosenblum suggest that in the udder lactenin is inactive.

Nevertheless the rôle of lactenin or other antibacterial substances in the mammary gland cannot be lightly dismissed. For instance, Neave et al.[19] have shown that the cow is more susceptible to infection in the dry period than during lactation; and work now proceeding at the National Institute for Research in Dairying has revealed that in the dry period the antibacterial power of the secretion is low, the normal inhibitory activity returning in the colostrum on about the 2nd day post partum. There is good evidence, too, that the inhibitory properties of early colostrum and of milk are due to different substances. Finally it is known that the rate of growth of the milk streptococcus—*Strep. lactis*—is subject to seasonal variations. This organism is not susceptible to the inhibitory substances in milk,[20] and variations in the concentration of growth-stimulating substances might explain the seasonal changes. From an epidemiological viewpoint these growth-stimulating substances may be more important than the inhibitory substances.

THOUGHTS FOR INVESTIGATORS

Ramon y Cajal was wont to give his students a series of paternal admonitions on how to cultivate the scientific method. For the first time these have been translated into English [21]; and, though they include many reflections on the then depressed state of scholarship in Spain, they also contain much that is of general interest and aphorisms that will stand the test of time.

To pursue scientific investigation, says Cajal, is one of the most worthy and laudable of undertakings, for perhaps more than any other career it is permeated with the fragrance of universal love and charity. How much better, he says, to apply ambition in this way rather than in the army or in art "seeking the easy applause of the multitude who understand beauty much better than the truth." The scientist's statue has love for a pedestal and his triumphs defy the desecrations of time and the judgments of history. Indeed, as he contemplates his problems of Nature, he comes near to the ideal of Henry James, of becoming a collaborator with God.

There are no small problems; those which seem so are large ones not properly understood. To observe without thinking is as bad as to think without observing, and no fact need ever be considered too insignificant, for the minutiæ of today may be important truths tomorrow.

Analysing the qualities that can make or mar the young scientist, Cajal lists the indispensable attributes of the research-worker as mental independence, intellectual curiosity, perseverance, devotion to country, and a desire for reputation. The young man entering this field must beware of remaining too attached to his teacher. "How many of keen intellect we know," he adds, "who have had no greater misfortune than to have been pupils of a great man. Extreme admiration drains the personality and clouds the understanding." Defect for defect, Cajal prefers arrogance to diffidence; for whereas boldness measures its forces and conquers or is conquered, excessive modesty flies from the battle and is condemned to shameful inactivity. Besides, modesty is sometimes a mask for indolence. Many habitually mistake for incapacity a simple slowness in understanding and learning, and at times even indolence or the lack of some secondary quality such as patience, thoroughness, and steadfastness—attributes which can be acquired quickly with the habit of work and with the satisfaction of success. Deficiencies of innate aptitude may be compensated for through persistent work and attention. Work, in fact, substitutes for talent and even creates it, while the spirit is as capable of being educated as is the intelligence.

Cajal has sound advice to offer to those face to face with a scientific problem. Consider the problem by itself, he says, without deviating to secondary themes, the pursuit of which, by dissipating our attention, lessens our analytical forces.

> "Let us put aside unnecessary pursuits and those parasitic ideas connected with the futile trifles of life, fixing solely in our minds, aided by persistent attention, the data pertinent to the problem that concerns us. . . . Expectant earnest attention is not enough: it is necessary to reach total absorption. It is important to put to use all of our lucid moments, be it in meditation which follows prolonged rest or in the super-intensive mental work which only the nerve cell heated by congestion can produce, or finally, in unforeseen intuition which frequently flies out, like a spark of steel, from the impact of scientific discussion."

He urges the research-worker to cultivate the faculty of "cerebral polarisation" or chronic attention, orienting all faculties, if needs be for months or years, towards the single object for study. "Infinite in number," he adds, "are the brilliant minds that through lack of this attribute are rendered sterile in their meditations." When setting out on a problem—and we need never hesitate to strike out from somebody else's discovery—it is best to have before one all the bibliographical antecedents, or, as Cajal puts it, "to resort to a plebiscite of the learned." Human brains, he maintains, like desert palms, pollinate themselves at a distance. But let us never forget that while we may learn a great deal from books we gather more in the "contemplation of Nature—the reason and occasion for all books."

Though theories may be dangerous for the beginner, the working hypothesis is an essential part of an investigation, since it constitutes an interpretative questioning of Nature. If the hypothesis is a much abused weapon it is also an instrument of logic without which not even observation itself, by its very nature passive, can be realised. Nevertheless, hypotheses pass but facts remain; and while theories desert us facts defend us; they are the true resources of the scientist and are at once his real estate and his pedigree. In the writing of the paper which follows his research and hypothesis, he will constantly aspire to reflect object reality with the serenity and candour of a mirror, "drawing with words as the painter with his brush, forsaking in short the pretension of the stylist and the fatuous ostentation of philosophic depth." Above all he will resist the impulse to be premature, for "the desire to arrive first induces us at times to become shallow." If attacked, we must be prepared to defend ourselves; but when the sword is unsheathed let the tip be adorned with a bouquet of flowers.

In his review of illustrious failures in the realm of scientific endeavour he includes dilettantes or contemplators, the megalophiles, the instrument addicts, the misfits, and the constructors of theories. Many fall by the way because the mind is not pliable enough.

18. Wilson, A. T., Rosenblum, H. *J. exp. Med.* 1952, **95**, 39.
19. Neave, F. K., Dodd, F. H., Henriques, E. *J. Diary Res.* 1950, **17**, 37.
20. Morris, C. S., Edwards, M. A. *Ibid*, 1949, **16**, 161.
21. Precepts and Counsels on Scientific Investigation: Stimulants of the Spirit. By S. RAMON Y CAJAL. Translated by J. M. Sanchez-Perez, M.D. Edited and annotated by Cyril B. Courville, M.D. Mountain View, California: Pacific Press Publishing Association. 1951. Pp. 180.

"Like unmoulded steel," he writes, "our intellect represents a potential sword. Thanks to the forging and polishing of study it is transformed into the tempered and keen scalpel of science." And then he adds: "Let us have a cutting edge only on one side or on two at the most if we wish to conserve its analytical efficaciousness and penetrate to the heart of problems and let us leave to the scatterbrained adherents of encyclopedism the privilege of transferring their mentalities into dull weapons." Excessive attachments to one's own ideas must be avoided; so we must be our own prosecutor rather than our own attorney. "The worship of inflexibility or resistance to change, which in politics passes for virtue," he says, "in science is almost always an unmistakable sign of pride or shortsightedness." Plasticity implies youthful vigour, whereas inflexibility presages senescence. Finally, the successful scientist must renovate himself materially and mentally many times throughout his life; "for," says Cajal, "there are many different incarnations which come almost to interrupt the continuity of consciousness and the sensation of one's own personality. New reading and the change of one's ethical and intellectual environment continually alter and improve the atmosphere within, besides clarifying and refining the judgement."

OPINIONS ON THE CHARGES

OUTSIDE the field of politics the new charges in the National Health Service [1] (on which we have already commented [2]) have been accepted fairly calmly, perhaps because they were expected. Discussion has centred mainly on the best means of averting undue hardship. The *Times*,[3] for example, questions whether reimbursement should be limited to patients with incomes below the subsistence minimum standard of National Assistance.

The charge which perhaps threatens the greatest inequity is that on prescriptions. The *Pharmaceutical Journal* [4] asks whether this charge will delay the patient's calling on the doctor, with consequential danger to individual and national health; while the *British Medical Journal* [5] suggests that it will tell especially hard on old-age pensioners and on patients with long and serious illness. The *British Medical Journal*, observing that some patients are importunate in their demands for medicines and cotton-wool, says that "doctors are ready to educate their patients out of the bottle-of-medicine habit if given half a chance"; and on p. 364 of this issue Dr. Barrow claims that the prescription charge will cause patients to buy "patent" medicines, and argues that the road to true economy lies in the direction of health education and the construction of health centres. The *Times* says, on the other hand, that the charge is necessary as a temporary expedient, but adds: "Fundamentally, it is the circumstances of the doctor, who alone can give a prescription, not of the patient who expects (or is thought to expect) a prescription, that need changing." The General Medical Services Committee has expressed the view that the prescription charge "will inevitably introduce a financial barrier between doctors and those who need their services"; and it urges that doctors should not be required to play any part in the actual collection of the money.

The *Times* also holds that the new dental charges will fail to secure more treatment for the priority groups; eventually, it suggests, the school and the main dental service will have to be fused, with free treatment for priority patients and part payment by the rest. The council of the British Dental Association has declared that the requirement that all except the exempted shall pay the whole cost up to £1 will penalise patients seeking regular treatment, and encourage neglect of dental health; and the absence of exemption for those requiring treatment for the relief of pain will cause unnecessary hardship and suffering. The association urges that the exemption for young people should be extended to all up to the age of 21, and that all those who are not exempt should pay a percentage charge, with a maximum of £4 5*s*.

1. *Lancet*, Feb. 2, 1952, p. 267.
2. Leading article, *Ibid*, p. 247.
3. Leading article, *Times*, Feb. 6, 1952.
4. *Pharm. J.*, Feb. 9, 1952, p. 86.
5. Leading article, *Brit. med. J.* Feb. 9, 1952, p. 312.

SIR ALLEN DALEY RETIRES

A BRILLIANT and influential career comes to an official end with Sir Allen Daley's retirement next week from his post of medical officer of health and school medical officer of the County of London.

Daley succeeded his father as M.O.H. for Bootle in 1911, and came to London, by way of Blackburn and Hull, in 1929. Placed in charge, under Sir Frederick Menzies, of the very extensive public-health work of the department, he also played an important part in the taking over by the L.C.C. of the 76 hospitals, with 40,000 beds, administered by the boards of guardians and the Metropolitan Asylums Board. The welding of these hospitals into an efficient municipal service was an immense undertaking, but it was largely accomplished before the outbreak of the second world war. Daley acted as chairman of departmental committees concerned with pathological services, hospital standards, hospital staffing, the district medical service, the ambulance service, and the tuberculosis scheme, and the reports of these committees influenced policy outside London as well as within L.C.C. borders. Promoted deputy in 1938, he succeeded Menzies as county medical officer in 1939. The L.C.C.'s mental-hospital service was placed under his administration in 1941 and he then became head of the biggest municipal hospital service in the word. Its part in serving the civilian sick and the air-raid casualties of London, despite the heavy bomb damage its buildings sustained in some 660 incidents, enabled it later to say that no acute case of illness and no casualty ever failed to get a bed in an L.C.C. hospital. In 1944 Daley's distinguished services were recognised by the bestowal of a knighthood.

The ending of the war plunged Sir Allen into the problems of reconstructing the hospital service and preparing for the National Health Service. In London these problems were peculiarly complex. Not only had the L.C.C.'s staffs, records, and hospitals to be handed over to four separate regional hospital boards and several boards of governors of teaching hospitals, but the maternity and child-welfare services of the 28 Metropolitan boroughs and the City had to be taken over and integrated with the remaining health services of the L.C.C. The smooth accomplishment of both tasks owed much to Daley's administrative genius. This period also saw his energies and abilities utilised in wider spheres. As president, and then for four years as chairman of council, of the Society of Medical Officers of Health, he occupied the leading position in the counsels of his own branch of the profession. He also occupied an ex-officio seat on the Central Health Services Council, sat on many of its standing advisory committees, and was chairman of that on mental health. Many voluntary bodies sought his assistance, and as elder statesman he befriended and guided many of his junior colleagues.

Blessed with good health, an astonishing capacity for work, an excellent memory, an abiding interest in men and things, and the saving grace of humour, Daley has served his day and generation well, but has still much to give us. Like Sir Arthur Newsholme before him, he goes for a few months to America, where, at the instance of his friend Dr. Huntington Williams, he will act as part-time associate health officer of the City of Baltimore and will also lecture in several American universities. On his return there will certainly be no lack of employment for his wisdom and experience; and we speak for hundreds of his friends in the medical and nursing professions in wishing him many fruitful years of healthy, happy, and energetic retirement.

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DIRECTOR-GENERAL, DANISH HEALTH SERVICE

PUBLIC-HEALTH services all over the world have a common purpose—the treatment of the sick, the prevention of disease, and the promotion of health. But their administration differs from country to country, for it depends on the social structure and economic strength of each community. Like other legislation, public-health legislation bears its own national stamp, and has its own historical background. Because the tubercle bacillus looks the same all over the world, and because infection is spread by the same routes in northern and southern hemispheres, we cannot assume that the fight against tuberculosis can be conducted according to one universal, international plan. But since our common purpose is to find the best methods for conducting public-health activities according to local needs and circumstances, we should probably all benefit by learning something of public-health administration in other countries. May I tell you how we order these things in Denmark?

THE DANISH WAY

Denmark has no ministry of health. A short-lived attempt at creating such a ministry towards the end of the '20s made it clear that Denmark is too small to benefit from this kind of administrative machine. Nor is a department with general charge of health incorporated in any of the existing ministries. Instead the various branches of public health are administered by the different ministries concerned and by the local authorities, and the money voted for public health is provided by both central and local budgets.

The local authorities own and manage the hospitals, appoint their own health committees, are mostly responsible for food inspection, maintain the tuberculosis dispensaries, and look after child health. The cost of these services is met from local taxes, but the central government makes refunds of varying size, fixed by law.

As the central department for local government, the ministry of the interior is responsible for many parts of the health services, and it therefore seemed to be the appropriate ministry to be given general charge of the national health service, when this was created. But other ministries also take a hand in public health. The ministry of social affairs is in charge of sickness insurance, factory legislation, industrial health, and other social legislation. The ministry of agriculture administers many parts of the food inspection service, though the Food Control Act itself comes under the ministry of the interior. The ministry of education is responsible for the school medical service as well as the university hospital (the Rigs-hospital) at Copenhagen. Indeed all the ministries touch on public-health work at some point. Even the ministry of ecclesiastical affairs has medical advice on the planning of cemeteries.

With such scattered public-health administration there is a danger of diffusion of energy, overlapping, and lack of organised planning. Obviously, a coördinating medical body is necessary. In Denmark, as I have said, we have tried to achieve this without a ministry of health and without a ministerial health department. Outside these departmental services, but closely associated with the different sections, we therefore set up in 1909 a central institution of public health—our National Health Service.

HOW THE DANISH N.H.S. WORKS

Our health service supervises public health and nursing, including dental surgery, midwifery, and pharmacy, advises the public in all matters requiring a knowledge of medicine or drugs. The various departments of the central administration also consult it. The service is responsible for health and nursing, in the army and navy, the university hospital, and Greenland.

The service watches the state of the public health closely, sees that public-health legislation is observed, draws the attention of local authorities to infringements and defects, considers suggestions from authorities or organisations, and submits recommendations for improvement. The service also offers guidance on special health measures. It supervises all State and local hospitals and private nursing-homes. Plans for new buildings or for extensive alterations to hospitals must be submitted to the service. Private homes also require the permission of the minister of the interior for building or extensions.

All doctors, dentists, midwives, nurses, pharmacists, masseurs, and other auxillary workers are under the authority of the service and it must be consulted before appointments are made to medical posts at hospitals and elsewhere.

The head of the national health service, the director-general, must be a doctor, but he is not allowed to practise. On the service's staff are doctors, lawyers, nurses, and pharmacists. The service has its own department of medical statistics. Consultants are linked with the service by their membership of the scientific board, on which the different specialties are represented. Other members of this board include an active general practitioner and a dental surgeon. Important State institutions which come under the health service include the State Serum Institute, the State Institute of Hygiene, the Pharmaceutical Council, and the Control Laboratory for drugs and medical preparations.

Another important branch of our national health service is the corps of county and district medical officers. Their relationship with county council, town council, and rural council is like that of the national health service and the government. They are the local representatives of the service with the same mandates vis-à-vis the local authorities, and they are also members of the local health and epidemiological committees. Through these officials—and of course by direct discussions with local councils when necessary—we are always in touch with every aspect of public health all over the country. Besides being doctors, these health officers, who are appointed by the Crown, must have spent three months in an epidemiological department, three months in a psychiatric department, and three months in general practice. They also take a four-month course in public health at a university. But, apart from this obligatory training, preference is given to candidates with the widest experience of clinical medicine. Private practice is allowed so long as it does not interfere with their official duties. Though this permission may occasionally be abused, I believe that the health officer's continued contact with practical medicine is of value to his official work. It also enhances his prestige among the non-medical members of the health committee who might otherwise be inclined to regard him as a superior clerk.

EXPANSION OF THE HOSPITALS

In 1932 an amending Act was passed to bring the service into line with modern needs. At that time the most important task facing the service was the development of the hospital system.

About 1930 this problem was laid before a gathering of representatives from all over the country, with the suggestion that each county should build one, or perhaps two, central hospitals. For a start each would have at

* From a lecture entitled The Development of the Health Services in Denmark, delivered to the Irish Academy of Medicine on Nov. 5, 1951. The lecture will appear in full in the *Irish Journal of Medical Science*.

least three departments—surgical, medical, and radiological—and to which more special departments would be added as might be desirable and financially expedient. Despite the delays of the war, this object was attained during the next 15 years. Each county now has at least one central hospital, as well as a number of smaller hospitals, each with 50–100 beds, in the charge of a surgeon.

The area of Denmark is 42,900 sq. km. and the population in 1950 was 4,300,000. We now have 5 medical-surgical beds and 0·6 infectious-diseases beds per 1000 of the population. For tuberculosis we have 1 bed per 1000 and for mental diseases 2·5 beds. Taking all the different kinds of hospitals together we have 10·4 beds per 1000 inhabitants.

The present difficult financial position, which we can scarcely expect to improve in the near future, makes the further improvement of our hospital system less easy. We shall still have to make the fullest use of the smaller hospitals—including some which ought to be closed. But in Denmark distances are such that it will be possible to turn the hospital system of each county into one organic whole, with the central hospital as the pivot.

The central hospital system is supplemented by special hospitals. As they receive their patients from wide areas they are outside the framework of the county hospital system and are run wholly or partly on behalf of the State. For example, we have two departments for neurosurgery and hope to open two more. There are three radiotherapy departments, built and run by the National Cancer Society with State subsidies. There are also two hospitals for orthopædic patients, which are private institutions but are maintained by the State.

Our hospitals for mental diseases were the first part of the health service to be placed under central administration, though the City of Copenhagen still administers its own, for which it receives a State subsidy. These hospitals are due for extensive modernisation, but this will require so much money that it must proceed slowly.

GENERAL PRACTICE

The hospitals are only one side of the treatment of disease, though it is the more conspicuous and most expensive. Treating the sick outside the hospital in their own homes and in the doctor's consulting-room is the other side.

If we are to improve our hospital system and keep it abreast of medical progress, it is essential for financial reasons to take care that the hospitals do not grow bigger and treat more patients than is necessary. We must see that family doctors are used to the full in the service of healing by helping them to get all the laboratory tests and specialist examinations they need in order to treat as many patients at home as possible. In Denmark we have about 2500 well-trained general practitioners, and it would be poor economy not to see that they were fully employed treating the sick. The work of the hospital must be carried outside its walls to the practitioners by means of laboratory tests, X-ray examinations, and so on. This difficult problem can be solved only by amicable coöperation between medical and non-medical hospital authorities and the organisations of the medical profession. A beginning has been made, and most of the central hospitals now have laboratories which undertake investigations for general practitioners.

TUBERCULOSIS

Parallel with the reorganisation of the hospitals, the local authorities, at the suggestion of the national health service, began to open municipal tuberculosis dispensaries. In each county a dispensary system was established, with a tuberculosis hospital as the centre and its chief physician as the director of both the hospital and the dispensary work. Consultations are held at clinics in different parts of the county, and each is staffed by a tuberculosis-trained nurse. These dispensaries cover both urban and rural areas. Under the provisions of the Tuberculosis Act, half of the cost of running the dispensaries is refunded by the State. This work was completed in 10 or 15 years, and Denmark now has long been covered by tuberculosis dispensaries.

Tuberculosis in Denmark is retreating so rapidly that we shall soon have to consider the possibility of using some of the tuberculosis institutions for something else. Dispensary work, keeping a check on the population, and maintaining the B.C.G. immunisation which is now general throughout the country, will then be the chief task. The dispensaries will remain as vigilant sentries in this watch service, always with the valuable support of the National Society for Combating Tuberculosis. Under the direction of this society an examination of the entire population is now being carried out, with B.C.G. immunisation for those who react negatively. These examinations, which will be finished during 1952, have uncovered no surprises in the form of concealed cases of tuberculosis; so our statistics rest on the best possible foundation. The death-rate for all forms of tuberculosis was 78 per 100,000 in 1927 (2710 deaths), and 14 in 1950 (588 deaths).

At the same time as tuberculosis dispensaries were being opened, the Federation of Danish Dairy Organisations was carrying out a widespread campaign against bovine tuberculosis, with the result that Denmark is now completely rid of that type of tuberculosis. This organisation has spent large sums on hygiene, both in the cow-byre itself and in every branch of food production that depends upon it. Foot-and-mouth disease, which sometimes also attacks man, can now be brought under control by immunisation, and contagious abortion among cattle is being fought energetically.

PREVENTIVE MEDICINE AMONG CHILDREN

Another important piece of preventive work began with a six-year experiment to see whether the high infant mortality could be reduced by employing health nurses. These nurses visited the homes and taught the mothers how to look after their newborn children in the first postnatal year. The experiment was made in three districts, two rural and one in a Copenhagen slum. It was financed in equal shares by the Rockefeller Foundation and the local authorities. From the outset the health nurses were welcomed by the people; more than 99% of whom opened their doors to them. The results were so good—infant mortality in the selected districts dropped to half—that an Act extending the work was quickly passed. This allows local authorities a State refund of half the cost of employing health nurses on such work. The Act was a turning-point in Danish health legislation, for it was the first law aimed at preserving the health of healthy people.

Besides their ordinary training, health nurses must take a year's postgraduate course at the university at Aarhus. This course was planned by the national health service and the Rockefeller Foundation, and for the first four years was financed by the foundation and the Danish life insurance companies. Afterwards the State took it over. For the first few years after the Act was passed we could not train enough health nurses to meet the demand. Then the war came and hindered the scheme; so we still have not enough nurses to cover the whole country. About 300 of them are now employed, and a third of these work in rural areas. More than half the children in Denmark are now under the regular supervision of a health nurse.

Since 1945 preventive health legislation has been extended to expectant mothers and school-children. Now every expectant mother has the right during her pregnancy to be examined three times by her doctor and seven times by her midwife. In their first year children have the right to three medical examinations, besides the advice and supervision of a health nurse. From then till they go to school at the age of 6, healthy

children are examined once a year. Their health, up to the ordinary school-leaving age of 14–15, is then the charge of the school doctor.

These free routine examinations are offered to all children, regardless of their social standing. Before starting school the children are examined by the local practitioner, usually the family doctor. The fee for this is fixed by the State in consultation with the Danish Medical Association: half is paid by the State and half by the local authority. In the early days of this school service many general practitioners were chosen as school doctors. In future they will be required to pass a special course, but this has not yet been started.

Another valuable piece of health legislation arose from a small epidemic of malignant diphtheria during the war. This condition had not been diagnosed in Denmark for many years, but this epidemic gave us an opportunity to introduce diphtheria immunisation. Now, by the Act of 1943, everybody under 18 years of age can be immunised against diphtheria free of charge. This immunisation is carried out by the doctors for a fee fixed by the ministry of the interior after consultation with the Danish Medical Association, and the whole cost is borne by the State. Widespread propaganda, backed by the fear of an epidemic, made it possible to get almost the whole population immunised, and the infectious-diseases hospitals emptied of diphtheria patients in a short time. For the future, all that remains is to maintain the interest in immunisation. The fever hospitals are now being taken over for other purposes and replaced by small isolation wards. Economically, the diphtheria campaign was a good investment, and the public-health service, otherwise known for its expensive demands, secured a good trump card by publicising the saving of money by preventive measures.

FREE WILL AND GOOD WILL

Diphtheria and B.C.G. immunisation are offered to all free of charge. The community is so vitally—and financially—interested in the campaign against these diseases that it naturally pays the whole cost. This principle was also accepted for the services offered to expectant mothers and children. Protection against disease is thus offered to all free of charge. Acceptance of this help is voluntary, but parents who refuse to have their children examined by the school doctor must send the school a certificate from their family doctor that he has examined the child. Compulsory measures may sometimes be necessary in public health, but they ought to be exceptional.

We need the good will of the people for our work. That is why the help of the local councils in running the hospital system, in housing inspection, in food control, and so on, is so important, and why the local health committees are so valuable. These committees are appointed by the popularly elected councils and the elected element is in a decided majority, especially in the rural areas. They are sometimes not very active. From time to time we receive suggestions from idealistically minded professional men that they should be replaced, wholly or partly, by eminent, zealous specialists, doctors fully trained in hygiene, engineers, with preferably a policeman in the rear—or in the van—as the case may be. Undoubtedly splendid results are obtainable with the aid of such expert and powerful teams armed with orders and regulations and fines or other penalties. But we should then lose the chance of training the lay helpers who, on the long view, are necessary to obtain solid lasting results.

Besides the health officer who is ex officio a member the health committee has specialists associated with it as officials. In the course of this coöperation on council and committee between the elected representatives of the people and the hygiene experts of the public-health administration, we secure an ever-growing body of informed lay helpers.

In the last 10 years our preventive legislation has created a large new medical field. The question was naturally raised how this work could be done most efficiently and economically. It was suggested that it would be cheaper, and technically perhaps more effective, to carry out diphtheria immunisation by sending out teams of young doctors and nurses. It was also considered whether it would not be advisable to appoint pædiatricians to examine the children.

These suggestions could not be dismissed as worthless or as impracticable. Indeed, it might have been cheaper to adopt them. But we had no doubt that the newly created medical work belonged by right to the general practitioner.

In any public-health service it is imperative to use the practitioner's knowledge and energy to the full. If you push him aside and deprive him not only of the work but also of the chance of earning something, first in one field and then in another, the result will be a disillusioned hard-up profession; and an impecunious doctor who has lost courage and who cannot afford to keep his medical knowledge abreast of the times is apt to be both dangerous and costly to society. On the other hand a public-health service that turns the general practitioners into interested collaborators, not only in treating the sick but also in the work of preventing disease and of promoting health, will have added greatly to its own strength.

Medicine and the Law

Death after Dental Extraction

LAST July at Nottingham assizes a widow was awarded £4500 damages for the loss of her husband and £50 in respect of his pain and suffering, the defendants being Dr. X and the Chesterfield Royal Hospital. A Chesterfield dentist, the late Mr. J. W. Slack, had also been sued; but the jury found that he was not negligent.

The widow's husband died in the hospital after 19 teeth had been extracted. The jury found that Dr. X and the hospital were negligent, the doctor being 70% responsible. They also found, however, that there had been contributory negligence on the part of the deceased. After argument on these findings, Mr. Justice Hallett gave effect to the jury's view that the dead man had contributed 50% to his own death. The learned judge therefore awarded the widow the £50 above mentioned and a sum of £2250, the latter sum to be paid in the proportions of 70% and 30% by Dr. X and the hospital.

The litigation had in some respects run a curious course. The defendant hospital had not pleaded contributory negligence and thus was in difficulties over benefiting by the jury's finding in that respect. Mention was made during the hearing of a suggestion that the deceased and his wife might have been aware that the patient was unable to take certain chemotherapeutic tablets, and that one or other of them should have informed the defendants of that important fact. The actual finding of contributory negligence was based on the fact that the patient took only eight of the tablets supplied to him. He was, it seems, unable to swallow more.

On appeal[1] the finding of contributory negligence in this respect was upset. Lord Justice Somervell and his two colleagues failed to see that the deceased had been at fault. A patient who has just had 19 teeth extracted might not be able to swallow normally. Accordingly the judgment awarded to the widow has been restored to the full sum fixed by the jury instead of the £4500 being halved. Dr. X will have to contribute 70%, in accordance with the jury's finding.

1. *Nottingham Guardian*, Jan. 24, 1952; *Derbyshire Times*, Jan. 25, 1952.

Special Articles

MEDICINE WITHIN THE ATLANTIC COMMUNITY *

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THE cultural contacts that used to exist between American and European medicine have become so tenuous in recent years that some Americans feel that they might as well be severed altogether. This professional chauvinism has an explanation, yet it is a blow to any hopes of cultural harmony within the Atlantic community. If medicine, with its universal concern with humanity, cannot maintain itself in the currency of international thought, what hope is there for the other intellectual disciplines, which together form the basis of Western civilisation ?

CHANNELS OF COMMUNICATION

Let us consider, one by one, the existing channels for the flow of medical thought across the Atlantic.

Reading Each Other's Publications

Fortunately library facilities are now fairly good in the main medical centres on both sides, but the circulation of at least one new British journal among American libraries is, to my personal knowledge, a fraction of what it should be. Apparently some librarians now see little sense in subscribing to new journals from abroad.

The reader of publications from overseas does not always know how to evaluate them. To the reader, the author is usually nothing but a name—certainly not a colleague. So, although his paper is read and his ideas are almost unconsciously assimilated, it does not always seem necessary to refer to the original source of the ideas, when the reader himself comes to write about the same subject. This grave tendency to use the ideas of foreigners without acknowledgment is apparent in both British and American literature. It creates ill-feeling on either side and prevents international intellectual harmony. It would not happen—at least not so often—if the two authors were personally acquainted.

Exchange Lecturers

Some distinguished doctors are invited back and forth across the Atlantic each year to tell of their contributions to medical science. They are invited because they are distinguished ; from which it is obvious that they have spent long, industrious years in the laboratory—more rarely, the hospital—and are now weary. Many of them are old and some are retired. Though the formal presentation of their accumulated wisdom is helpful to their audiences, they seldom have time, or indeed inclination, to talk to the younger men personally—to learn something from them in return. They say their piece and depart to a formal dinner with the heads of the university.

Official Delegates

A small number of doctors, officially representing their country or one of its institutions, travel back and forth to meetings of W.H.O., W.M.A., F.A.O., defence meetings, university centenaries, and the like. Intellectual exchanges are rare on such occasions. The young are excluded.

International Conferences

The International Physiological Conference in Copenhagen last year provided me with the first opportunity since the war of seeing in Europe any reasonable number of my American friends and contemporaries. But these were relatively few, and nearly all in physiology—not medicine. There has been no medical conference of the same kind to bring my clinical friends over. International Hæmatology at Cambridge was too narrow.

Hospital Exchanges

Johns Hopkins and Guy's Hospital have had a long-standing arrangement of temporary exchanges of staff which fortunately continues. The chair of surgery at the Peter Brent Brigham (Harvard) invites temporary British tenants. St. Mary's Hospital (London) is about to begin an exchange of a junior staff member with the Children's Hospital (Boston). These are the only examples known to me of such an excellent arrangement.

The War

A number of American doctors were over in Britain during the late war (a Harvard unit early in 1941). Though some personal contacts were made, there was not much time for a free exchange of ideas just then.

Travelling Fellowships

East to West.—The happy days when Sir Joseph Barcroft went freely to America to coöperate with American physiologists on the assault on Pyke's Peak are long since departed. Then there were easy personal contacts between medical scientists on both sides of the Atlantic, aided a good deal by the colossus of Sir William Osler, with one foot in Baltimore and one in Oxford. Even up to 1939, a considerable number of young, excited, but unknown British doctors found their way across the Atlantic, either on travelling fellowships or, quite often, on their own resources. These men now form the nucleus of the Horseshoe Club in Britain. During the late war, a few medical students enjoyed the hospitality of American medical schools through the far-sighted generosity of the Rockefeller Foundation.

Since the war, the flow of young British doctors visiting America has been reduced to a mere trickle. The fellowships provided by the Nuffield, Rockefeller, and Commonwealth Foundations are so few that many young men must feel that it is futile to apply for them. Other travelling scholarships, in the gift of universities, mostly still offer their prewar stipend, on which a man can no longer live, even if it could be converted to dollars ; for example, the M'Cunn travelling scholarships from Edinburgh University are advertised in the 1951–52 University Calendar as providing £100 "for such period less than a year as the trustees may approve." No young doctor can go, as in the past, on his own resources, because he is not allowed to convert his pounds to dollars.

Thus it was that in three months' travel through medical centres in the States, I met only three young British doctors. I met more Danes. Except for the tiny minority, the iron curtain of financial restriction has cut us off from the leading centres of medical thought in the Western world.

West to East.—Since Osler's time, the flow from west to east has been thin. This is because the best young American doctors are usually unable to get away. Many come from poor homes and must make money ; many are married and that makes it worse ; competition is so keen at home that they must be around when the plum job comes up ; there are almost no travelling fellowships which they have any hope of winning ; and, to our shame, their chiefs often see no sense in gaining experience outside America.

The late war prevented those who had wanted to come to Britain from doing so. One of Hitler's successes was to widen the gulf between American and British medicine.

* A previous article, also based on a report to the Nuffield Foundation, appeared on Jan. 5, 1952, p. 45.

It should be realised that the future of American medicine is no longer in the hands of the international figures, now aged 50 and up, whom we were used to seeing about at international conferences before the war. The American principle is "early ripe and early rot": if you are not a professor of medicine before you are 40, you've had it. On the age-group 35–45 the best of present thinking and the direction of future policy largely depends. The numbers in this group who have ever been outside the U.S.A.—except to endure boredom in U.S. army messes round the world during the war—are microscopic. Yet I think there can be no doubt that many of these men would welcome a chance to visit Britain, now that they have established jobs and if they were financially helped to do so.

WHAT CAN BE DONE?

I hope that I am right in seeing this as a bad situation that needs something done about it. Knowing nothing of the administrative problems involved, I would nevertheless like to suggest:

East to West.—There is a shortage of young medical research-workers in the U.S.A. just now. The men of registrar status who would normally have joined a research unit for a year or two before going into practice, are now called up by the army. Research units generally are short of such men, whereas we have plenty, with honourable military records. Several people I met said that they would welcome a British doctor to fill their vacant post and would pay him a fellowship salary. The only trouble seems to be, to get him across the Atlantic. Possibly the Fulbright Fund could help in this.

West to East.—There are first-rate young doctors in America who would like to visit us, but they do not know who would welcome them here because neither they nor their friends have ever been over. Also most of them are married, so it would have to be made financially possible for them to bring their families. Possibly, again, the Fulbright Fund could help. Alternatively it would be a great advantage if the National Health Service would consent to pay visiting American doctors a salary, equivalent to that of their British contemporaries. One reason why some young American doctors are loth to apply for jobs over here is that work in British hospitals does not count for the purpose of the three years' work in an "approved" hospital, now necessary before they can qualify to sit for their Boards—the equivalent of our M.R.C.P. and F.R.C.S. The Board of Internal Medicine in the States at present approves for this purpose only one British hospital—Hammersmith. This is manifestly absurd, and based on ignorance of our institutions. I feel sure that if some responsible body like the members committee of the Royal College of Physicians were to furnish the board with a proper approved list, it would be accepted, and this barrier would be removed.

The few exchanges of doctors that now take place are usually arranged privately; a professor on one side of the Atlantic writes to an old friend on the other, asking if he could find room for one of his young men if he can win a travelling fellowship. When the answer is "Sorry, full up this year," he may then write to another; but soon he gives up because he has run out of personal contacts, and anyway it involves so much time and letter-writing. I know of one such recent instance, where a young American who wanted to pay for himself for a year in Britain, was unable to make the necessary contacts. It should be emphasised, moreover, that, as the older men come to retire, the number of people who are able to make such personal contacts, through friends on the other side, is steadily diminishing.

On the one hand there are medical departments, on both sides, that would welcome a visitor and could (sometimes) pay him a salary; on the other there are men who would welcome the opportunity but do not know where the openings lie. What is needed is some system for bringing the two together.

SCOTTISH ADVISORY COMMITTEES

THE Secretary of State for Scotland has appointed new members to the standing advisory committees of the National Health Service in place of those who retired on Dec. 31, 1951, and has reappointed other members whose term of office expired on that date. Medical members have been appointed or reappointed as follows:

Dental Advisory Committee.—Dr. Russell Logan (Edinburgh), reappointed.

Nursing and Midwifery Advisory Committee.—Dr. J. Hewitt, F.R.C.O.G. (Glasgow), appointed.

Pharmaceutical Advisory Committee.—Dr. A. Smith Pool (Glasgow), appointed.

Standing Advisory Committee on Health Services in the Highlands and Islands.—Dr. Thomas Scott (Inverness), appointed; Dr. Angus Lamont (Foyers, Inverness) reappointed.

Public Health

TUBERCULOSIS IN SCHOOL ENTRANTS AND THE INVESTIGATION OF ADULT CONTACTS

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RECENTLY a tuberculin-jelly test has been applied to all school entrants in Wolverhampton. Last year we decided that all the children who were tuberculin-positive should have a full clinical examination, including estimation of the erythrocyte-sedimentation rate (E.S.R.) where necessary, and chest radiography at the Royal Hospital, Wolverhampton. The county borough of Wolverhampton has a population of about 162,000 people, of whom 25,000 are of school age. Each year there are about 3000 new school entrants. In 1948 and 1949 2% of these gave positive results to the tuberculin-jelly tests. In 1950 the refinement was adopted of first abrading the skin with fine sand-paper before applying the jelly. In this series 6% gave positive results (table I). This method

TABLE I—RESULTS OF TUBERCULIN-JELLY TESTS IN SCHOOL ENTRANTS

Year	No. tested	Positive reactors
1948	3028	62 (2·05%)
1949	2965	60 (2·02%)
1950	2923	183 (6·26%)

was described by Deane (1946), who suggested that it gave results about equal to those of the 1 in 1000 Mantoux test.

HOME VISITS

Later, arrangements were made to have the homes of some of these positive reactors visited by the almoner and her staff, so that the problem could be explained to the parents and they could be reassured. We hoped that useful information about contacts and home conditions might be obtained.

Of 183 tuberculin-positive children, only 125 attended for clinical and radiographic examination at the hospital.

TABLE II—TYPES OF HOUSES IN WHICH TUBERCULIN-POSITIVE CHILDREN LIVED

Old houses	19*
Pre-war council houses	43
New council houses	15
Prefabricated bungalow-type houses	3
Privately owned modern houses	20
Total	100

*13 with no bathroom.

The almoner visited the homes of 100 of those, chosen at random, and the results are summarised in tables II and III. The standard of housing was reasonably good, and overcrowding seemed to be below the average for this densely populated and heavily industrialised area. So far as cleanliness and equipment were concerned, the homes of 75 were good, 18 fair, and 7 poor. Wolverhampton has multiple and varied light-engineering projects, and there is virtually no unemployment. Wages are comparatively high; therefore, even in houses with considerable overcrowding, there always seemed to be enough to eat. No case of actual want was discovered in this series.

TABLE III—NUMBER OF CHILDREN IN FAMILIES VISITED BY ALMONERS

Only child	2	3	4	5	6	7	8	9	10
13	39	22	10	5	5	2	1	2	1

The almoners found the parents coöperative, although rather a high proportion of adults refused to attend for radiography, mainly because of the inconvenience and, one suspects, through fear that a lesion might be detected. Mothercraft appeared to be good or reasonably satisfactory in 91 cases and bad in 7 cases, and the remaining 2 children were looked after by neighbours.

RADIOLOGICAL FINDINGS

The results of chest radiography in the 100 children whose homes were visited by the almoners are summarised in table IV. There was evidence of active, healing, or healed tuberculosis in the X-ray films of 29 of these children, and in 16 cases the adult contact was known—i.e., the mother in 4 cases, the father in 3 cases, the sister in 1 case, an aunt in 3 cases, and a neighbour in 5 cases. 4 unsuspected cases of adult pulmonary tuberculosis were found. In 2 of these the child's mother had an exudative type of lesion for which sanatorium treatment was required. Another mother had an early pulmonary lesion. The fourth adult case was the sister of one of the children. She appeared to have a quiescent Assmann's focus. In the case of 9 children with a healed primary complex an adult tuberculous contact could not be found, and 6 children with clear chest X-ray films were reported to have been in contact with adult cases of pulmonary tuberculosis. Contact with sputum-positive adults was neither known nor discovered in the investigation of the remaining 65 children whose chests were radiographically clear.

TABLE IV—RESULTS OF CHEST X-RAY FILMS OF TUBERCULIN-POSITIVE SCHOOL ENTRANTS

Active primary complex	Probably healing primary complex	Apparently healed primary complex	Clear chest
1	10	18	71

MASS-RADIOGRAPHY SURVEY

Recent examination of a second, smaller, group of school entrants revealed 48 tuberculin-positive children. The father of 5 of these was confined to bed at his home with pulmonary tuberculosis. The children were therefore seen at the hospital, and 2 were found to have active primary tuberculous complexes requiring rest in bed.

In the previous survey there was inevitably a long waiting period for radiography at the hospital X-ray department, and in spite of reassurance many parents became unduly worried. It was decided that the Wolverhampton Mass Radiography Unit should be asked to radiograph these tuberculin-positive children and as many child and adult contacts as possible. The school health department arranged that the parents should be interviewed by the health visitors, so that the objects of the investigation could be fully explained to them. Forty positive reactors attended and, by chance, 20 of them were boys and 20 girls. The radiography unit radiographed these children and 64 child and 97 adult contacts. Only 2, probably quiescent, cases of adult pulmonary tuberculosis were discovered in this survey. These will be followed up by the unit. 9 of the children had doubtful miniature films. On further examination with large X-ray films and E.S.R. estimations 4 were considered to have active and 3 healed primary complexes.

A much higher proportion of adult contacts attended for radiography in this survey, probably because they were assured that there would be practically no delay. In this instance circumstances decreed that a public holiday should be chosen for the mass-radiography examinations. However, we felt that the best attendance would be obtained if the women and children were asked to attend on a morning or afternoon, and the men in the evening after normal working hours.

DISCUSSION

Although both of these series are much too small to be statistically significant, they revealed 3, or possibly 4, unsuspected cases of active adult pulmonary tuberculosis and 36 cases of active, healing, or healed primary tuberculous complexes in the children. During the past two years 19 children with tuberculous meningitis in the age-group 0–15 years were admitted to Wolverhampton hospitals from within the county-borough area, and, of these, 14 were aged less than 6 years. Hospital treatment is long and costly. At least 2 of the children are now quite deaf. In view of the suffering involved, steps should be taken to reduce the incidence of this complication by ensuring adequate rest for all children with active and healing primary tuberculous complexes, and by segregating all children, especially if negative tuberculin reactors, from sputum-positive adult cases.

A logical extension of this work would be the frequent, perhaps half-yearly, tuberculin-testing of all children from an early age, starting at the child-welfare clinics. The need for this is emphasised by the large number of cases of tuberculous meningitis in children aged less than 6 years. As soon as Mantoux conversion occurs they and their contacts, especially their parents, should be radiographed. A mass-radiography unit can deal with about 500 persons in a day, and one should try to obtain as large a number of contacts as possible, so that the unit may not be idle for part of the day.

Dick and Thompson (1946) approached the problem of childhood tuberculosis from a different aspect, in that they tuberculin-tested the child contacts of adult cases of active pulmonary tuberculosis. They radiographed the positive reactors and found that a high proportion of new cases fell into the age-group 0–4 years.

The intradermal Mantoux test was not used in the search for positive tuberculin reactors. Deane (1946) suggested that the method used in this series gave similar results, whereas Dick (1950) considered that flour-paper was more satisfactory than fine sand-paper. The work of Lendrum (1951) supported the view that the flour-paper technique was better. However, Clark (1951) found that, without previous abrasion of the skin, tuberculin jelly (Allen & Hanburys) gave results identical with those obtained when 0·1 ml. of a 1 : 1000 dilution of Old Tuberculin was injected intradermally. One can therefore assume that these tests are equally effective, and the jelly test is undoubtedly the method of choice.

The visits paid by the almoners and health visitors to the homes of these children were very helpful. As the health visitors work in well-defined areas and are known in many of the homes they seem to be the proper people to contact the parents.

In the initial survey 125 children were examined clinically before being radiographed. It was soon apparent, as is well known, that signs of primary complexes were virtually non-existent, and that those with suggestive symptoms often had radiologically clear chests. These routine examinations took up a considerable amount of time, and the subsequent large chest radiographs made heavy demands on the available hospital radiographers and films. These objections were all overcome by the examination of positive reactors and their contacts by mass radiography. The miniature chest films were of a very high standard; but, if there was the slightest suggestion of a lung lesion, a large radiograph was taken. Several independent observers were of the opinion that little, if any, chest pathology, was missed in this second small series. However, it is obviously desirable that a much larger survey should be undertaken to assess this point, especially in toddlers.

SUMMARY

A tuberculin-jelly test was applied to almost 3000 children entering school for the first time, and 6·26% were found to be positive reactors. Of these, 125 were examined clinically, and the homes of 100 were visited by the almoners. From these 100 cases at least 3 unsuspected cases of active pulmonary tuberculosis were discovered among the adult contacts and 11 apparently active or healing primary tuberculous complexes were found among the children.

These investigations would have been much simplified if, as in the second group, all positive reactors and their child and adult contacts had first been radiographed by the mass-radiography unit, which seemed to be an efficient filter in the search for active pulmonary tuberculosis among tuberculin-positive school entrants and their adult contacts.

However, it is suggested that an investigation large enough to be statistically significant should be undertaken to verify the impression that few lung lesions are missed on mass-radiography films in school-children. Younger children present a more difficult problem, whether large or miniature chest films are taken. So far as liability to tuberculous infection is concerned, they seem to be a far more important age-group than the school-children.

A plea is made for the frequent routine mass radiography of recently converted tuberculin-positive children and their adult contacts in an attempt to reduce the incidence of childhood pulmonary and meningeal tuberculosis. Chest radiographs of mothers especially should reveal unsuspected cases of adult tuberculosis, because the fathers will often have been radiographed at their place of work.

It is again emphasised that more facilities are required for the separation of children from adults with active pulmonary tuberculosis.

I wish to thank Dr. Bertram Sergeant, senior assistant school medical officer, Wolverhampton, who organised the tuberculin testing of the children; Dr. T. F. McCarthy, medical director of the Wolverhampton Mass Radiography Unit; Miss E. M. Fox, M.A., head almoner, Royal Hospital, Wolverhampton, for allowing me to cite the results of the almoners' work; and especially Dr. H. Everley Jones, who suggested the investigation, for his constant encouragement and advice.

REFERENCES

Clark, N. S. (1951) *Lancet*, ii, 464.
Deane, E. H. W. (1946) *Ibid*, i, 162.
Dick, W. P. (1950) *Brit. med. J.* ii, 141.
— Thompson, B. C. (1946) *Lancet*, ii, 791.
Lendrum, J. D. (1951) *Brit. med. J.* ii, 148.

Parliament

Dentists Bill

IN the House of Lords on Feb. 5, LORD WOOLTON, Lord President of the Council, moved the second reading of this Bill, which he described as granting the dentists the status and dignity of a self-governing profession; regulating the admission of foreign and Commonwealth dentists to the Dental Register; and providing for the training of ancillary dental workers. The debate centred round this last provision.

In view of our urgent need for more dentists and of the success of ancillary dental workers in New Zealand it was not surprising, Lord Woolton thought, that the Government should consider whether similar workers could be used in this country. The Bill, however, did not empower the G.D.C. to introduce these workers straightway, or indeed at all until an experimental scheme had been tried. Their two-year training would include the extraction and filling of teeth, and after the first batch of ancillaries had been employed for a year the G.D.C. would report on the results of the experiment. Only then would the G.D.C. be able, in conjunction with the Privy Council, to draft regulations to establish a class of ancillary workers. Thus the initiative in this matter would lie with the G.D.C., a large majority of whose members were dentists.

Lord TEVIOT was uneasy about the introduction of ancillary workers. He believed the charges for dentures would reduce the strain on the dental services, and he felt it was more important that children's teeth should be attended to by a dental surgeon than those of adults. Lord WEBB-JOHNSON was in favour of encouraging the training of dental nurses provided that the limits of their activities were narrower than were at present laid down in the Bill. They should not, in his view, be permitted to interfere with living tissues. Any attempt to train dental ancillaries to undertake extractions and fillings was bound to encroach on the facilities for training dentists. Lord AMULREE supported the employment of oral hygienists to undertake scaling, cleaning, and polishing, not only in the public service, the Armed Services, or the National Health Service, but also in private practice. He felt, however, that extractions and fillings were a major task to give to the unqualified.

Lord HADEN-GUEST believed that in present circumstances some form of ancillary workers was essential to get dental work done for children. We were threatened with a generation of children with neglected teeth.

The Earl of ONSLOW, replying for the Government, pointed out that the word "nurse" could not be used in describing a dental ancillary because of the protection it enjoyed under other Acts of Parliament. The task of evolving a suitable name for the dental ancillary would be left to the G.D.C. We must face the fact that there were not nearly enough dentists, and that there was no hope of securing them in the foreseeable future. Obviously something must be done, and surely the aim should be to obtain the greatest good for the greatest number, rather than complete dental treatment for a restricted number. If what was proposed came to pass it would be entirely erroneous to call the dental ancillaries either "untrained" or "partly trained." They would in fact be highly trained in one particular aspect of the dental profession.

QUESTION TIME

Hearing-aids and Wigs

Replying to Dr. A. D. D. BROUGHTON, Mr. H. F. C. CROOKSHANK, Minister of Health, said that the free issues of hearing-aids and wigs to National Health Service patients during 1951 were 93,454 and 9750 respectively, and the estimated cost, excluding overheads, was £329,000 and £124,000.

In England Now

A Running Commentary by Peripatetic Correspondents

FROM our window we look up towards the Strand, the way taken so often by kings. Never were the crowds so thick and quiet. A movement like wind in a cornfield, as men bared their heads, heralded the little cortège—a few police, the team of Royal Horse Artillery in hussar uniform and busbies, and then, suddenly and briefly, the gun-carriage, the brilliant yellow of the Royal Standard, a wreath of flowers, a crown. The royal dukes, walking close behind it, were followed at a little distance by members of the King's household, taking him from his home to Westminster Hall, the centre of this realm.

Was ever procession more impressive? A few men walking behind a gun-carriage on a dull day through the dull streets of London. A silent multitude. But on the coffin three superb symbols—the banner of history, the crown of majesty, and the flowers of affection.

* * *

The first people to enter Westminster Hall on Tuesday morning were in time to see the last watch of the night relieved. First came three Gentlemen-at-Arms, their slow steps matched by the ringing of their spurs. They were followed by four Yeomen of the Guard in the familiar red uniform, to replace their comrades who had stood through the cold night muffled in dark cloaks. Lastly, four officers of the Coldstream Guards, wearing heavy bearskins, entered at a slow march, swords raised in their right hands. As the new guard took up their place round the catafalque the old one silently moved away. The officers slowly lowered their swords, folded both hands on the hilt, bowed their heads, and began their vigil.

* * *

It was a cold, clear morning, the north-west wind fluttering the Royal Standard at half-mast above Westminster Hall and stinging our eyes as we gathered in the queue that stretched nearly from Lambeth Bridge. We were a crowd representative of all His late Majesty's subjects—solid men in bowler hats and black ties, housewives, typists, a group of African students, two demure nuns, a country clergyman with rosy cheeks, an old lady walking with a stick. Strange to think that a week ago on a clear sunshiny day like this the King had been out shooting at Sandringham for the last time.

We moved steadily along, talking to our neighbours, and after about twenty minutes were ascending the steps into Westminster Hall where the column split in two, proceeding more slowly down from the entrance into the vast hall, its grey stone flags carpeted in grey, with the red-carpeted dais in the centre on which stood the purple-shrouded catafalque, draped with the Royal Standard. Six tall candles glowed on the dais, at the four corners of which stood sentries of the King's Body-guard in their Tudor costumes facing outwards, their heads bowed and leaning on their partisans. Closer to the bier stood the four officers of the Household Brigade, in full-dress uniform, resting on their reversed swords. On the coffin gleamed the jewelled Crown, Orb, and Sceptre and at the head rested the white wreath of the Queen Mother, with her signature Elizabeth legible on the card from the distance at which we passed. The gorgeously apparelled Gentlemen-at-Arms bowed their plumed helmets over their long staves. The sun came glinting through the high windows under the lofty roof as we passed silently by, turning and lingering as we got to the far end of the hall to store up the impression of a poignant and historic occasion.

Magnificent and awesome in its setting and pomp, yet the King's Lying-in-State will remain, for those of us who saw it, a supreme example of the simplicity of our constitutional monarchy. In death as in life the King was accessible to us, and we felt part of the family of which he was the beloved Head.

"I wouldn't have missed it for worlds," said my neighbour, a burly Yorkshireman, as we issued into New Palace Yard and he replaced his trilby. "It's times like this that make this country great. Ee, well, now I must go and do some work."

Letters to the Editor

NEEDS AND MEANS

SIR,—In your leading article of Feb. 2 you say: "The charge of a shilling for each prescription is not much more than a token charge, and is probably worth trial on its merits as a means of discouraging excessive demands for medicines." This means that you are content to ally the medical profession with a retrograde step, which attacks one of the best features of the health service—namely, that at the time of need there shall be no financial barrier to medical treatment—and also that you tacitly accept the implication that the profession is unable to control excessive and unreasonable prescribing.

There can be few general practitioners who can accept this point of view. Even the old National Health Insurance system made no financial imposition at the time of need; and if the issue of form E.C.10 is curtailed by the imposition of a charge, this will simply mean that the public has resorted to patent medicines—not that it has stopped swallowing medicine. For many years we have been telling patients to come to the doctor and have their ailments diagnosed before they are treated, but the charge for prescriptions will encourage them to go to the chemist. This particularly applies to children.

If the medical profession are unable to resist the "excessive demands for medicines"—which may be true in some cases—this is because the competitive element is still present in general practice and is inevitable under the capitation system of payment, and also because of the failure of the medical profession to educate the public on health matters. I believe that the shilling charge will not remove either of these two pathological conditions, which are in the main responsible for the symptomatic "generosity" of the general practitioner. More money should be spent on the preventive services, including health education and health centres; this would lead to true economy.

Birmingham. M. BARROW.

SIR,—Those aware of the lack of financial margin of old-age pensioners, war pensioners, and recipients of National Assistance will be concerned by the proposed new charges in the National Health Service.

Refunds will be obtainable by war pensioners and recipients of National Assistance, but one wonders from what source they will obtain the initial outlay. From wide experience I can state that many tuberculous persons, for example, have few friends able to advance financial aid. It would be interesting to know why old-age pensioners are not eligible even for the refund. My work brings me into direct touch with this section of the population, and many are living in near-poverty. It seems that those most in need are to be deprived of the benefits of the health service.

London, S.W.6. E. D. ANDREWS.

CAT-SCRATCH FEVER

SIR,—I hasten to take up the challenge in your annotation last week. Even the usually phlegmatic cats of London have been known to turn against their mistresses, and we have recently treated a case of this disease here.

The child, who is under Prof. Alan Moncrieff's care, showed the typical features you describe, together with erythema nodosum, which has also been observed in other published cases. By the courtesy of Prof. P. Mollaret, who supplied the antigen, we have been able to confirm the diagnosis by the specific skin test as

well as by biopsy of the primary lesion; and a full account of the case will shortly be published.

The Hospital for Sick Children, Great Ormond Street, London, W.C.1. P. J. N. COX Medical Registrar.

Sir,—The following case seems to fit the description in your annotation.

A woman, aged 42, attended the medical clinic here in November last year. On Nov. 7 a kitten had scratched her scalp above the right ear; 3 days later she noticed some swelling in the right side of her neck; and 10 days later her right upper cervical glands were quite grossly enlarged, painful, and tender. At that time she had 11,000 white blood-cells per c.mm., of which 60% were lymphocytes. The glands decreased in size, and a month later were barely palpable.

St. James' Hospital, London, S.W.12. R. D. WIGLEY.

THE TREATMENT OF PEPTIC ULCER

SIR,—May I congratulate Dr. Doll and Dr. Pygott on their article of Jan. 26, in which they advance evidence, not a-priori speculation, about the effect of certain factors on the healing of gastric ulcers. Thereby they were able to demonstrate that phenobarbitone and ascorbic acid are useless. Although they were unable to reach definite conclusions about rest, strictly supervised diet, and the psychological effect of being in hospital, at least one of these factors appeared to have some influence, since the progress of their patients in hospital was significantly (though not strikingly) better than that of those on an ambulant régime. It should be noted, however, that even if, say, rest had been proved to quicken the rate of healing of ulcers, that would not justify its routine advocacy. Only evidence that rest will prevent future relapses, or that it is harmful in the long run to advise it merely for those patients who fail to progress satisfactorily when ambulant, would warrant that conclusion.

Dr. Avery Jones (Feb. 9) evidently does not share my view that the onus of proof should rest upon the advocates of remedies, since he says that the traditional treatment of peptic ulcer "should not be discarded until evidence has been obtained against it." He also attaches great weight to the "collective experience of the ulcer population." But did not similar "collective experience" in other fields apparently confirm in the past the almost universal bleeding, purging, and starving, and, in the treatment of bleeding peptic ulcer, the giving of nothing by mouth except a few sips of ice-cold water? Does Dr. Avery Jones suggest that our ancestors would have been wrong in discarding these remedies because no-one had produced evidence of their uselessness or harmful effects, derived from controlled therapeutic trials?

Dr. Avery Jones touches on wider issues when he says that, in his article on peptic ulcer from a general-practitioner series (which I quoted), he "naturally . . . set out the orthodox views." Undoubtedly, in such series it is a common practice to advocate remedies for no other reason than that they are traditional. In consequence, one may still read that a brisk purge, pushing fluids, a light bland diet, eradicating septic foci, and attention to the general health are "essential"; that tonics should be exhibited, faulty habits of living corrected, and strain avoided. Recently, general practitioners were even informed that in the treatment of alopecia areata, "altering the patient's rhythm of existence, rest, and the administration of bromides and phenobarbitone are often justifiable"; and, in the treatment of essential hypertension accompanying obesity, "a careful programme of watching and waiting is probably the best solution." Yet those who write in this way may be sharply critical when discussing the merits of some new antibiotic, and give precise reasons for their statements. Why should not editors of medical journals insist that the same critical analysis be made of the general and well-established remedies? And why should general practitioners be regarded, not as intelligent men who desire a constructive discussion of the value of all therapeutic measures, but as simple creatures who deserve only a series of ex-cathedra pronouncements from some high authority?

Farnham, Surrey. JOHN W. TODD.

HICCUP DURING ANÆSTHESIA

SIR,—Dr. Fajardo's remedy (Feb. 2) for this annoying condition—the intravenous injection of 20 mg. of 'Methedrine'—is most interesting, and will doubtless be tried by anæsthetists in Britain. But while his method takes three minutes to restore tranquillity, the inhalation of the vapour from an ampoule of amyl nitrite will have the desired effect in thirty seconds. The side-effect of his method is hypertension; of amyl nitrite it is hypotension, which is without ill effect.

If the circuit in use is semi-closed, the gauze-covered ampoule is introduced into the corrugated tubing, the gases turned off, the expiratory valve closed, and the ampoule broken. Its vapour is helped on its way into the lungs by gentle manual assistance of respiration. With the closed circuit, the soda-lime should be switched off before the ampoule is broken, and should remain out of circuit for a short while afterwards. In each of ten consecutive cases the method—for which I claim no originality—has been successful.

In my experience, hiccup, though most common in upper abdominal operations, is not confined to this type of case.

Westcliff-on-Sea, Essex. J. ALFRED LEE.

SIR,—I was much interested to read Dr. Fajardo's observations, but I differ from some of his conclusions.

A year or two ago, in a series of 67 gastrectomies for which I anæsthetised the patients, I noted 18 cases of hiccup, all of which occurred with a particular surgeon who performed 25 of these operations. In the remaining 42 cases (where operations were performed by five other surgeons) I cannot recall a single instance of hiccup. The surgeon whose patients tended to develop hiccup during the operation did a more extensive resection than the others, and during the operation exerted great traction upon the œsophagus; when hiccup did occur its onset was always heralded by this particular manipulation.

The onset of hiccup (as in Dr. Fajardo's experience) was unrelated to the level or depth of anæsthesia; but, unlike Dr. Fajardo I found nothing that would control it. On the other hand, about 10 minutes after traction and excessive manipulation had ceased the hiccup could be readily controlled by various means. I would not class hiccup of this type with the more distressing variety that persists for many days after operation. The former type is caused by manipulation and rough handling, and tends to disappear when the trauma ceases. Thus any drug or combination of drugs which appears to alleviate the "anæsthetic" type of hiccup probably plays a minor part, since the attack would in any case soon disappear. Protracted postoperative hiccup, on the other hand, is not on the wane when treatment is instigated.

Acton Hospital, London, W.3. J. TOBIN Anæsthetic Registrar, Central Middlesex Group of Hospitals.

SIR,—Dr. Fajardo's letter raises several points:

1. Although I have noted hiccup during upper abdominal operations, it has, in my experience, been considerably more common immediately after induction of anæsthesia with intravenous thiopentone; and, though rhythmic, its rhythm

has been unrelated to that of the respiration. It has invariably passed off within 5–10 minutes, during which period the effect of the agent used for maintenance is being established and the secondary redistribution of the thiopentone is occurring. This observation suggests a correlation between the onset of hiccup and the initial high concentration of thiopentone in the central nervous system.

2. Hiccup during upper abdominal surgery would seem to be dealt with rationally by administering further doses of the appropriate relaxant to the point of respiratory arrest, and thereafter instituting controlled respiration; for there is doubt about the afferent pathways concerned in the reflex, but not about the efferent.

3. Leaving aside the arguments with which Dr. Fajardo supports his use of methedrine in the treatment of hiccup, it appears to me that 20 mg. intravenously in a single dose is too much. A few years ago I used to inject 15–30 mg. of methedrine *intramuscularly* to prevent hypotension during spinal analgesia, and commonly I observed gross hypertension and tachycardia, and sometimes even multiple extrasystoles, following its administration. More recently I have used it to raise the blood-pressure on completion of operations performed during "total spinal" analgesia, or for patients under the influence of hexamethonium bromide, and have found that an average dose of 5 mg. produces a satisfactory response, while sometimes 2 mg. has sufficed. In view of these observations, I think it likely that the injection of 20 mg. of methedrine intravenously may produce undesirable effects on the cardiovascular system, and will certainly obscure the circulatory effects of blood-loss and their response to treatment.

Carlisle. D. HUNTER SMITH.

THE RIGHT TO KNOW A RISK

SIR,—Your annotation last week raises a very important problem for the whole medical profession. In my opinion, should your line of thought be accepted medical and surgical activity would very soon be reduced to urgent life-saving procedures.

When a man of middle age comes to me with, say, a large inguinal hernia, I explain carefully to him why he should have an operation: his condition is bound to become disabling, and there is a risk of strangulation with all its dangers. But at the same time shall I also explain that whatever anæsthesia he has, and even if it is given by an expert, he may die of it, the chance of doing so being 1 in 2000? Shall I explain to him that, although his chest is clear, he may develop massive collapse of the lung, of which also he may die? Shall I explain to him that the risk of his developing phlebothrombosis and having a fatal pulmonary embolus is 1 in 600? Shall we abdominal surgeons tell all our patients that their very lives will depend on a single knot or stitch?

If all the possible risks in medicine or surgery had always been carefully explained to the layman (who, more often than not, is in no position to understand) surely Jenner would not have vaccinated his first patient, Pasteur would not have tried his anti-rabies inoculation, and mankind would probably be still without penicillin and blood-transfusion.

I think that the right attitude for the medical man, who alone can know the possible risks, is for him to ask himself before taking a decision: "If I was suffering from that patient's disease, would I accept the diagnostic investigation, treatment, or operation I am about to tell him he must have?" When a patient can feel that his medical adviser (whether general practitioner or specialist) takes such a view, he will give him his unbounded confidence and accept whatever treatment is advised.

It must not be forgotten—in the matter of venereal or pestilential diseases, for instance—that one person's undue fear of a very small risk may imperil countless others.

Brussels. J. LIMBOSCH.

INFECTION IN HOSPITAL

SIR,—Several points in the letter from Miss Edwards (Jan. 5) should be answered.

Although the memoranda on nursing procedures were circulated by the Ministry of Health, it was on the advice given to the Minister by the Nursing Advisory Committee. This committee must, therefore, take some responsibility for their content.

Might the committee also perhaps, in their capacity as advisers, have given constructive suggestions with regard to the distribution of the memoranda? These were sent to hospital management committees and boards of governors, which were asked to consider the suitability of the memoranda on certain nursing techniques "adapted primarily for the needs of nurses on broad general lines." There is no machinery for ensuring representation of nurses on these boards and committees, and yet it is suggested that at the discretion of these bodies the leaflets could be issued to the trained nursing staff "as they stand or adapted." Could there be any greater imposition on the nursing profession?

A careful reader of our letter of Dec. 15 would, we think, realise that rigid uniformity was the last thing that we desired or advocated. The very fact that we recommended "a progressive attitude" as being "necessary in those practising a living science under widely differing conditions" should have allayed any anxiety on this score. We have supported in the nursing press the policy of setting up procedure committees to avoid the rigidity which must result from central control.

The point made by Miss Edwards with regard to interviewing visitors shows clearly the difference between theory round the conference table and practice in the wards. Perhaps few who have not recently worked in hospital realise the difficulties with which the ward sister is faced today. Staffs are being reduced, the turnover of patients is becoming more rapid, and the number of treatments each patient receives has increased. In addition most hospital patients are allowed visitors daily. It is impossible to envisage how, with the heavy evening work, time could be found to interview visitors before they enter the ward. Visitors have spent time and money to come to the hospital, where, on most days of the week, they have only a brief half-hour with the patient. If, when the influx comes, some are detained for instruction on cross-infection, this is likely to be ill received.

The potential carriers of infection mentioned in the memoranda are medical, nursing, and domestic staff, patients' visitors, and official visitors, of whom chaplains and librarians are specifically named. Official visitors also include medical students, clerical, technical, and lay staffs, and social-service workers, which makes the problem even greater.

Is it possible that advice to patients' visitors on the dangers of cross-infection, with emphasis on the common cold, might be included in the instructions issued to patients before admission, reinforced possibly by the display of notices in the waiting halls? A second constructive suggestion is that any memoranda bearing on nursing matters that are issued in future to administrative bodies should also be forwarded in toto to the hospital matrons.

Principal Sister Tutor, Nightingale Training School, St. Thomas's Hospital, London, S.E.1. — M. B. GOULD, Chairman, Central Sectional Committee, Sister Tutor Section, Royal College of Nursing.

Principal Sister Tutor, Royal Infirmary, Liverpool. — R. B. M. DARROCH, Vice-Chairman.

Principal Sister Tutor, Guy's Hospital, London, S.E.1. — F. TAYLOR, Hon. Secretary.

Principal Sister Tutor, The Royal Free Hospital, Gray's Inn Road, London, W.C.1. — E. J. BOCOCK, Hon. Treasurer.

ECONOMY IN X-RAY FILM

SIR,—I enjoyed reading Mr. Downie's spirited letter (Feb. 2) on the seemingly pathetic inadequacies of diagnosis without special aids in general and Professor Röntgen's piercing eye in particular.

He truly says that special aids are designed to reveal evidences of disease to the visual sense. But his theme, I fear, has run away with him and has led him to an extravagant proposition. The eye, to him, is the only diagnostic instrument of any value. What wantonness is this that would lightly scatter the humbler senses to the four winds? They may have taste for all the use it is in diagnosis, but let us rescue the remaining three. Does not the ear, on occasion, tell us all we need to know about the activity of the bowel or the movement of air in the lung? And smell—why even this primitive sense may influence the choice of an antibiotic till the pus is thoroughly, if relatively slowly, investigated by refined visual methods. But the senses that reside in the hands, surely these are not to be carried away in the holocaust? No-one doubts, for example, when the necessity for operation for a swelling in the breast is in question, that the eye, however reinforced, is no match for the hand; again, no instrument is so perfect as the hand for quickly recognising small differences of temperature over large areas of skin.

Perhaps, Sir, your correspondent occasionally casts a regretful eye (evidently it would have to be an eye) on the time he wastes at the bedside when he is not, in awful silence and with hands folded in front of him, engaged solely in gazing intently at his patient.

University College Hospital,
London, W.C.1. C. J. LONGLAND.

BREAST-FEEDING AND DIET

SIR,—In their letter last week Dr. Walker, Miss Arvidsson, and Mr. Draper draw attention to the wide difference between the theoretical dietary requirements of lactating mothers and the minimal diets which appear to be compatible with successful lactation. They mention that they have made many analyses of the milk of Bantu women and raise the question of a biological assay of the nutritive value of the milk. It is very much to be hoped that the figures of their analyses will be published so that they can be compared in detail with those of other workers. In particular, information is needed of the composition and total quantity of milk secreted and of the actual amount of food taken habitually by poorly nourished mothers with sustained lactation. Might I suggest that the intake of breast-milk by babies with satisfactory weight gain might be a better measure of the nutritive value of the milk than the assessment of the "biological value" from the weight gain of rats? Judging by clinical experience there is reason to believe that a baby uses human milk more economically than cow's milk, and there may well be better usage by the young of each species of the milk proper to it. Dr. Walker and his colleagues almost imply defiance by the lactating mother of the law of conservation of matter. They mention the Bantu woman's freedom from osteomalacia despite her small intake and large output of calcium. If she is indeed in positive calcium balance, or only slightly in negative, while in full lactation, one must assume that with a small intake of calcium, absorption is, by Western standards, highly efficient. Presumably irradiation of the skin ensures this.

The counterpart of the African picture is the failure of lactation among some Western women who are convinced or greatly fear that their diet is insufficient for adequate lactation. This psychogenic effect has been observed in some women whose diet was adequate by all but their own discontented standards. One cannot see how the human race evolved if such quality and abundance were necessary. How far the psychogenic effects have come into play among mothers who have been the subjects of surveys of undernutrition it is impossible to say; they are an inescapable part of the mother's circumstances in famine. Precise knowledge is therefore needed to reassure some well-fed mothers as well as to guard the poorly nourished from depletion.

By all accounts the mammary equipment of the African negress is efficient. This is usually attributed to genetic qualities. A possible extra factor might perhaps be the subject of conjecture. Liver disease is sometimes accompanied by gynæcomastia in men, a fact attributed to failure of the liver to inactivate œstrogens. Is it possible that liver disease in Africans causes increase of breast tissue and that by this mechanism reproductive efficiency may be aided as well as impaired by chronic malnutrition?

Infant Welfare and Children's Department,
University College Hospital,
London, W.C.1. MAVIS GUNTHER.

ACUTE INFECTIONS OF THE FINGERS AND HAND

SIR,—I have read with much interest and profit Mr. Bailey's account (Jan. 26) of the hand and finger infections treated at University College Hospital in 1951. It is one of the few articles on this subject in recent years based on a large and comprehensive series and not devoted to the investigation of a special line of treatment. With the exception of penicillin, Mr. Bailey's rules of management coincide in principle with those described in pre-antibiotic days by Kanavel, Fiffield, and others: that is, there should be rest in the position of function, and drainage of localised pus by incision inflicting no permanent damage on the hand. Mr. Bailey does not list separately or emphasise, as the earlier workers did, maintenance and restoration of function.

Is it not reasonable to suppose that antibiotics should now permit modifications in some of these classical rules of treatment—especially in view of Mr. Bailey's statement, with which all will agree, that complications still occur and can be troublesome? It is probable that over 90% of the organisms in these infections are antibiotic-sensitive at the time of primary drainage; more radical surgery than might have been safe before the introduction of antibiotics is therefore justifiable. The two causes of pus in finger infections are bacterial activity and dead tissues. Antibiotics may be expected to control the one; the dead tissue, soft or bony, is under surgical control. When all dead tissue is removed at primary operation drainage is unnecessary and primary healing can be expected. It is also possible that healing may be accelerated and complications lessened if the raw surfaces are sutured together. The evidence for this view comes from Oxford and Windsor where work has suggested that, at any rate in certain cases, the primary suture of pulp-space and subcutaneous abscesses under antibiotic cover may give improved results. An unpublished series recently investigated at Guy's Hospital by Dr. P. Kendall further supports this view.

A comparison of some of the reported healing-times for pulp-space abscesses bears on this point.

Anderson,[1] dealing with a comparable group to Mr. Bailey's, gives an average disability period of 15·8 days (from first attendance) for a series of outpatients at Guy's Hospital, who were treated along classical lines and almost entirely without antibiotics. This series may be taken as a base-line from which to judge the improvement afforded by antibiotics and other means of treatment. Mr. Bailey gives an average of 18·7 days of disability. For smaller series of pulp-space abscesses treated by excision and primary suture Loudon et al.[2] give an average of 11 days of disability (from surgical treat-

1. Anderson, K. F. *Guy's Hosp. Rep.* 1949, **98**, 175.
2. London J. B., Miniero, J. D., Scott, J. C. *J. Bone Jt Surg.* 1948, **30B**, 409.

ment); and Arden et al.[3] give 12 days. Kendall's figure for a small series treated similarly is 5·8 days with no complications. The criteria of healing adopted by Anderson and Kendall were that the finger was scab-free and dressing-free. Mr. Bailey includes in his criteria the return of full function. Interpreted literally this must mean freedom from tenderness, return of normal suppleness in the scar, and full joint movement. These processes may take many days after re-epithelialisation and would add very considerably to the average time of healing.

Essential features in the treatment by primary suture are: administration of penicillin, careful exploration and examination of the abscess cavity (under tourniquet), and meticulous (though minimal) excision of all obviously dead tissue.

I am not myself yet convinced of either the need or the wisdom of inserting sutures into inflamed pulps, where the walls of the abscess cavities for the most part lie together readily after pus evacuation; the return of tensile strength in these sutured fingers can be extraordinarily rapid. While simple evacuation of pus may suffice for some early pulp-space abscesses, a search for and removal of all dead tissue, soft and bony, in the walls of these abscesses conforms with the known necessities for abscesses and infected wounds in other parts of the body, whenever such an excision can be done safely. The figures quoted above support the view that results are improved if the surgery comprises more than simple evacuation of pus. For the great majority of pulp-space abscesses today the healing-rate after thorough surgery approximates closely to that for clean sutured wounds of the pulp. The remaining need is for an antibiotic or other agent which can be relied on to cause the resolution of an established pulp infection, and obviate the need for surgery.

I do not agree that surgery still has to await the certain localisation and unequivocal presence of pus. This delay may amount to 3 days, and is often greater. In addition to the extra pain caused, it increases the risk of sequestration and slough formation. Antibiotic cover makes earlier incision safe, and I have yet to see one of the acute diffuse infections described by Koch follow such early drainage, even when the incision has anteceded the pus. My practice is not to delay incision for more than 2 days after the onset of symptoms.

London, W.1. PATRICK CLARKSON.

SIR,—I read with interest Mr. Bailey's article and the letter (Feb. 2) from Mr. McNeill Love. The length of treatment required in cases of erysipeloid may perhaps be due to delay in administration of penicillin. It is usually the failures in treatment or the untreated who reach hospital, and by then the infection is well established.

A series of 29 cases seen at an industrial clinic afforded opportunities for early treatment and showed the need for continuing injections after cessation of symptoms. Of these 29, 19 were cured by injections of penicillin 200,000–400,000 units twice daily for 4 days or less. In 10 cases recurrence took place after a latent period of 3–5 days, and further injections were given for 2–3 days. In 4 of these cases there was a second recurrence after a further latent period of 3–8 days. In 2 of these the symptoms cleared after penicillin injections for 2 days; 2 were given fomentations for a week, but the condition deteriorated and they required penicillin injections for 7 and 10 days respectively. All but 3 of these patients remained at work. In 3 cases the patients unfortunately had an incision at hospital—in 1 case as an emergency by an experienced surgeon. Pain and discomfort were more prominent than Mr. Bailey suggests.

Community Centre, Slough. M. E. M. HERFORD.

3. Arden, G. P., Kitchen, A. P., Powell, H. D. W. *Lancet*, 1949, ii, 188.

AURICULAR FLUTTER

SIR,—In your annotation of Feb. 2 you refer to Prinzmetal's observation that the Ta wave may be related to auricular strain.

In 1939, in collaboration with R. Langendorf, I fully described the electrocardiographic pattern of left and right auricular strain as manifested in displacements of the P–R segment.[1] In left auricular strain this segment is depressed in lead I (II) and elevated in lead III, while in right auricular strain it is depressed in lead III (II) and isoelectric in lead I. The displacement exceeds 0·05 milli-volts in pathological conditions and is analogous to the well-known changes in ventricular strain. We also showed that the pattern of right auricular strain can be observed in auricular tachycardia.

It was already known[2] that the PTa wave extended well into the ventricular complex, its duration being about 0·40 sec.; and that sometimes, particularly after exercise, it influenced the shape of the RST segment. The depression of the RST segment is actually caused by extension into it of the depression of the PTa wave. The duration of the PTa wave can be easily assessed in cases of 1st-degree auriculoventricular block.

In acute rheumatic carditis, as I have since observed, the auricular PR segment undergoes the same changes as does the ventricular pattern; and, with ischæmia, in most cases of long-standing arterial hypertension[3] the pattern of right auricular strain can be seen.

Leicester. LEO HAHN.

INDUSTRIAL DERMATITIS

SIR,—Dr. Hewitt's article of Dec. 15 seems to show that there may be considerable difference in different parts of the country.

The medical interviewing committee of the Ministry of Labour which meets at the Prince of Wales's Hospital, Tottenham, advises the disablement resettlement officers of Tottenham and the surrounding boroughs, who serve a population of 1–2 million. It has had referred to it, and has followed up, 192 disabled persons (178 males, 14 females) in the past three years. These were all cases on which advice was desirable as to the exact nature of the disablement and the possibility of placing, training, and resettlement. Of the 192, only 3 were referred by reason of industrial skin disability. These 3 cases were as follows:

A painter and decorator, aged 61, seen on June 1, 1949, was first notified in 1947 as a case of industrial dermatitis and received £200 compensation. The committee reported that it saw no reason why he should not return to work at his usual occupation, and his own doctor was advised to this effect. He ceased signing on at the local office and drew National Insurance sickness benefit. He was checked again and he is still "sick and unfit for work."

A male 'Bakelite' moulder was seen on Feb. 14, 1951, when he complained of gastric ulcer and industrial dermatitis. He had had eight jobs in six months. The committee reported that his gastric condition was not likely to bother him, and that his skin condition, although mildly ichthyotic, need not prevent him working. He was successfully placed as a labourer on March 27 and is still so employed.

A 46-year-old woman, a gown-presser, was seen on Oct. 3, 1951. She complained of industrial skin disease for the past 6 years and effects of laminectomy for sciatica. The committee reported that the skin condition was unlikely to improve, but she was referred to the orthopædic department for treatment of the spinal condition and is still attending hospital and is unfit for work.

The records of 4000 cases of disabled persons who have registered at the Tottenham Labour Exchange have been examined. In all, 18 people were found to have had skin disease at the time of registration. Of these, only 1 is now unemployed. He registered on Dec. 1, 1950,

1. Hahn, L., Langendorf, R. *Acta med. scand.* 1939, **100**, 279.
2. Goldhammer, S., Scherf, D. *Z. klin. Med.* 1932, **122**, 134. Herles, F. *Čas. lék. čes.* 1936, **75**, 660.
3. Hahn, L. *Brit. Heart J.* 1940, **2**, 101.

and although he has had various short-term jobs he has been unplaced since Jan. 2 this year. In 2 further cases the men reached the age of 65 and retired, and were thereby automatically withdrawn from the list. Of the 15 who are now employed, 13 have been trained for, or have been found employment in, different work.

Thus the problem of industrial skin disease in North-east London does not appear to be as onerous as in Manchester.

London, N.5. L. B. BOURNE
Chairman, Medical Interviewing Committee, Tottenham.

TOXICITY OF DIHYDROSTREPTOMYCIN SULPHATE

SIR,—Permit me to correct a partially erroneous account of my own work, as well as a serious misapprehension concerning the relationship between the potency of dihydrostreptomycin and its purity, both contained in the article by Dr. Don and Dr. Gregory (Jan. 12). I am quoted there as having found that both streptomycin and dihydrostreptomycin sulphate have little effect on the auditory nerve of the cat. My actual observations[1,2] were that, whereas severe depression of the microphonic response of the cochlea occurred in some of the animals treated for a month with very large doses of the various salts of streptomycin, such changes did not occur in those treated for even longer periods with equally large doses of crystalline dihydrostreptomycin sulphate. Vestibular function, on the other hand, which was abolished in the cats receiving streptomycin, was disturbed in all of those receiving dihydrostreptomycin. Both the streptomycin and the dihydrostreptomycin used were at least 95% pure.

With a less highly purified sample of amorphous dihydrostreptomycin hydrochloride (about 73% pure), moderate depression of cochlear function was recorded. Hydroxystreptomycin[3] and the various neomycins,[4] certain of which have a remarkable degree of ototoxicity, had a greater effect on the cochlea than on the vestibular end-organs. I have suggested, therefore, that such substances, or other compounds closely related to them, may have been present as impurities in some preparations of dihydrostreptomycin hydrochloride and sulphate employed in the treatment of tuberculosis. Although the record is not always clear, samples of both salts are reported by various authors to have caused serious impairment of hearing in a number of their patients, often without producing the disturbance of vestibular function frequently encountered in streptomycin therapy. It is my assumption that such highly ototoxic impurities, which admittedly have not yet been identified by chemical means, can enhance whatever ototoxic property may be inherent in dihydrostreptomycin itself.

Unfortunately, Dr. Don and Dr. Gregory have also mistranslated potency values for dihydrostreptomycin preparations directly into expressions of per-cent. purity. This by no means uncommon mistake has led them to conclude, quite erroneously, that the dihydrostreptomycin sulphate used or recommended by earlier investigators was much less highly purified than that employed in their own study. For dihydrostreptomycin sulphate a purity of 100% is represented by a potency, or antimicrobial activity, equivalent to that of 800 μg. of dihydrostreptomycin base (=800 units) per mg. of substance—a value which may be estimated by microbiological or chemical assay. This theoretical maximum potency is determined by the ratio of the molecular weight of dihydrostreptomycin base to that of the dihydrostreptomycin salt:

$$C_{21}H_{41}O_{12}N_7/C_{21}H_{41}O_{12}N_7 \cdot 1\tfrac{1}{2}H_2SO_4 = 583{\cdot}6/730{\cdot}7 = 0{\cdot}799$$

Therefore a potency of 725 μg. of base per mg. of substance, which is the present minimum standard for crystalline dihydrostreptomycin sulphate as established by the U.S. Food and Drug Administration, represents a purity of 725/800 or almost 91%, and not 72·5% as Dr. Don and Dr. Gregory have assumed. Similar corrections should be applied to the other figures which they quote from the American literature. The crystalline dihydrostreptomycin sulphate actually being used in this country at the present time has a purity substantially higher than 91%. The figure of 88% (700–710 μg. of base per mg. of substance) cited as the minimum purity of the present British material is, to the best of my knowledge, correct.

It is perhaps a counsel of perfection to urge that no dihydrostreptomycin should be used unless its potency approaches the theoretical maximum. Nevertheless I continue to believe, despite a number of adverse reports which have appeared concerning certain preparations of this antibiotic, that the still controversial questions of its ototoxicity and efficacy as compared with streptomycin can be answered only by investigations conducted with material of the highest purity available.

Merck Institute for Therapeutic Research, Rahway, New Jersey, U.S.A. JOSEPH E. HAWKINS, jun.

1. Hawkins, J. E. jun. Transactions of the 9th Streptomycin Conference, Veterans Administration, Washington; 1950, p. 109.
2. Hawkins, J. E. jun. *J. Pharmacol.* 1950, **100**, 38.
3. Hawkins, J. E. jun. Transactions of the 10th Conference on the Chemotherapy of Tuberculosis, Veterans Administration, Washington; 1951, p. 224.
4. Hawkins, J. E. jun. Transactions of the 11th Conference on the Chemotherapy of Tuberculosis, Veterans Administration, Washington; 1952 (in the press).

TUBERCULIN-JELLY TEST

SIR,—I was interested to read the letters of Dr. Grzybowski (Dec. 15) and Dr. Duncan Leys (Jan. 5) concerning the tuberculin-jelly test in children, as their experience differs from mine.

A few years ago I personally tested a series of 160 children in order to compare the efficacy of the jelly test with that of the Mantoux test. In each case I applied a jelly test and at the same time did a Mantoux test, using the purified protein derivative (P.P.D.), first strength. In those cases where the latter was negative I repeated the test using the second strength (equivalent to 1 : 100 Old Tuberculin). 74 children were shown to be tuberculin-positive; 65 showed a positive reaction to both the jelly and the first-strength P.P.D., while another 6 showed a positive reaction to the jelly combined with a positive reaction to the second strength. In only 3 cases was a positive Mantoux reaction obtained to the second-strength P.P.D., in the absence of a positive jelly result. In this series, therefore, examined before the use of flour-paper in the preparation of the skin, the tuberculin-jelly test failed to demonstrate tuberculin sensitivity in only 4% of cases. It can be assumed that if flour-paper had been used this figure would have been even smaller.

It may not be generally known that, for the jelly test to be really effective, certain measures are necessary:

1. The skin should be cleansed with either acetone or anæsthetic ether. It appears that neither spirit nor methylated ether is adequate to remove the natural body grease. I have known several cases where the jelly test has appeared to be negative when one of the latter was used as the cleansing agent, but where a positive reaction was obtained when the test was repeated using acetone.
2. Flour-paper readily loses its efficacy, and one piece should not be used more than half a dozen times; if used too often, a false negative result may be obtained.
3. It is important that the result of the test is not read until at least twenty-four hours after removal of the plaster, when any reaction due to the plaster itself will usually have faded. One feels that some, at least, of the false positives reported may have been due to too early reading of the test.
4. It greatly facilitates accurate reading if the jelly is applied in a distinctive form, such as in the shape of the letter V, and if it is used sparingly so that when the plaster is applied it remains in this form, instead of coalescing to form a "smudge."

The tuberculin-jelly test is of such value for children attending clinics that it would be a great pity for it to fall into needless disrepute.

Willesden Chest Clinic, London, N.W.10. V. U. LUTWYCHE.

BLOOD-GROUPS AND REPRODUCTION

SIR,—The regrettable errors of calculation to which Dr. Sanghvi has referred (Jan. 26) gave no false strength to my general case (Jan. 12), nor was my statistical offence in combining his Bombay and New York figures either so grave or so naïve as he implies. Its dual purpose was to increase the size of sample and to render this larger sample considerably closer to that of Waterhouse and Hogben [1] in ABO and Rh blood-group distribution than are either of Sanghvi's [2] samples taken separately. Given the Indian distribution of Rh blood-groups, the Bombay sample must contain roughly half the percentage of Rh-negatives in the Waterhouse and Hogben (Caucasian) sample, whilst the smaller New York sample consists very largely of Rh-negative individuals. On the other hand, the New York sample is very close to Waterhouse and Hogben's in its incidence of B, whereas the percentage of B is more than twice as great in the Bombay sample.

The importance of ABO blood-group distribution in this connection can be seen from Sanghvi's own data. In every one of the eleven classes (save O ex O) in his combined Bombay and New York sample in which the ratio of male to female infants at birth is greater than unity, at least one B gene is to be found in either the infant or the mother or in both; whereas in the only three classes—all major—with a ratio lower than unity neither the infant nor the mother has a B gene, but one or other of them, or both, has at least one A gene. This would lead one to expect that any race with a higher B + O content than another would have a higher ratio of male to female infants at birth, and in Sanghvi's Bombay sample the sex-ratio is 1·20 to 1 (or 6 to 5) whilst in his New York sample it is 1·11 to 1 (or 11 to 10). Indeed, in the light of the Hirszfelds'[3] long-confirmed discovery that the frequency of the B gene falls more or less steadily, whilst the frequency of the A gene rises, from Eastern Asia to Western Europe and North America, one is led to the conclusion that the ratio of male to female infants at birth will be found to reveal much the same geographical gradation.

TABLE I—CORRELATION OF FERTILITY DATA OF WATERHOUSE AND HOGBEN WITH SEX-RATIO DATA OF SANGHVI

Waterhouse and Hogben's data				Sanghvi's New York data [2]			
No. of families in sample	No. of children in sample	Types of mating	Average no. of children per family	Ratio of male to female infants	Infants ex mothers	No. of male infants born	No. of female infants born
59	210	B × A	3·56	1·93	B ex B	29	15
17	62	B × B	3·53	1·75	B ex A	7	4
66	229	B × O	3·47	1·08	A ex O	55	51
244	835	O × A	3·42	1·00	O ex B	21	21
209	686	A × O	3·28	1·00	A ex B	6	6
54	171	O × B	3·17	0·91	B ex O	21	23
189	599	A × A	3·17	0·84	A ex A	85	101
63	196	A × B	3·11	0·83	O ex A	45	54

That my working interpretation of the Waterhouse-Hogben data, like Dr. Sanghvi's interpretation of his own sex-ratio data, is more genetic than serological seemed to be clear from my previous letter, but the position is shown concretely on the left-hand side of table I.

In this the least obvious of the many points of interest is that the combined average number of children per family is 3·33 for the matings B × A and A × B, 3·33 for B × O and O × B, and 3·36 for O × A and A × O. (For the matings O × O and A × A it is 3·33, whilst for B × B and AB × AB it is 3·31, and for the remaining six rare matings 3·35.) The over-all descending order of fertility in the sample is B-O-A in the case of fathers, whether the mother is A, O, or B—that is, both in homospecific and heterospecific matings—whilst in mothers the descending order is (more or less) A-O-B, complete reciprocity with male fertility being prevented by the descending order of the crucial matings B × B, O × O, and A × A. This would suggest paternal dominance, given the genetic interpetation of the findings, but that serological factors may also be active, whether before or after conception [4] or before or after birth,[5] is suggested by table II. An ABO mating is said to be heterospecific when the husband possesses an A or B antigen lacking in his wife.

TABLE II—COMPARATIVE FERTILITY OF PARENTS, WITH REGARD TO ABO SPECIFICITY, ACCORDING TO DATA OF WATERHOUSE AND HOGBEN

Average number of children per family

Group of parent		Specificity of parent		Group of parent	
A	B			AB	O
3·67	3·04	Heterospecific mother	Heterospecific father	3·38	..
3·31	3·28	Homospecific mother	Homospecific mother	3·22	3·47
3·24	3·51	Heterospecific father	Homospecific father	2·66	3·39
3·20	3·68	Homospecific father	Heterospecific mother	..	3·31

The genetic reciprocity seen on the left-hand side of table I is fairly well mirrored on the right-hand side, which gives Sanghvi's New York data in isolation. The New York figures, however, suggest less clearly than do the combined figures, given in my previous letter, that a loss of group-B females, either before or during gestation, is accompanied by a loss of group-A males—a differential selection paralleled by the Waterhouse-Hogben sample, in which, on the average, the least fertile females are those of group B and the least fertile males are those of group A, and in my sample of infertile matings, with its excess of group-B wives and of group-A husbands. Unfortunately, too, there is no indication in Sanghvi's paper of the birth-rank—which is likely to be important—of the infants in either sample, nor has he stated whether all the individuals in his New York sample were white. Moreover, one cannot overlook the possible influence of the Rh groups in the determination of sex-ratio.

In this connection the Rh findings in abortion, summarised in my previous letter, make specific the general findings of Hirszfeld [6] in Wroclaw. Indeed, the substantial correlation, in abortion, between the Rh mating of Rh-negative husband × Rh-positive wife and the ABO matings of lower than average fertility according to the Waterhouse-Hogben data seems to be more or less progressive from A × O through O × B and A × A to A × B, whilst the reciprocal correla-

TABLE III—THE GENOTYPIC RH MATINGS

Hetero-specific matings	Homospecific matings			Hetero-specific matings
Wife homo-zygous	Both partners homo-zygous	Wife hetero-zygous	Both partners homo-zygous	Wife homo-zygous
Rh rh × Rh Rh		Rh Rh × Rh rh		Rh rh × rh rh
	Rh Rh × Rh Rh	Rh rh × Rh rh	rh rh × rh rh	
rh rh × Rh Rh		rh rh × Rh rh		Rh Rh × rh rh

1. Waterhouse, J. A. H., Hogben, L. *Brit. J. soc. Med.* 1947, **1**, 1.
2. Sanghvi, L. D. *Nature, Lond.* 1951, **168**, 1077.
3. Hirszfeld, L., Hirszfeld, H. *Lancet*, 1919, ii, 675.
4. Race, R. R., Sanger, R. Blood Groups in Man. Oxford, 1950.
5. Struthers, D. *Brit. J. soc. Med.* 1951, **5**, 4.
6. Hirszfeld, L. *Polsk. Tyg. lek.* 1947, **2**, 28; *Rev. Hém.* 1949, **4**, 3; *Méd. Hyg.* 1950, **8**, 299; *Schweiz. Z. allg. Path.* 1951, **2**, 133.

tion—that between Rh-positive husband × Rh-negative wife and the matings of higher than average fertility—is more or less progressive from O × A through O × O and B × O to B × A. The Rh matings apart, however, the tendency to abortion seems to progress from B × O to A × B.

In view of the probable involvement of the Rh mating of Rh-negative husband × Rh-positive wife it should be made clear that, as can be seen from table III, the only circumstances under which Rh heterospecificity can exist between mother and fœtus are the presence of a heterozygous Rh-positive fœtus in a homozygous Rh-negative mother and of a heterozygous Rh-positive fœtus in a homozygous Rh-positive mother. It follows that if, in fact, abortion is encouraged by both the forms of Rh incompatibility, it must occur less often (though relatively more often) in the mating of Rh-negative husband × Rh-positive wife than in the mating of Rh-positive husband × Rh-positive wife. This being so, any over-all shortage, in abortion, of the mating of Rh-positive husband × Rh-positive wife should be rather less marked in association with the sub-fertile ABO matings; and this is exactly the situation in the abortion sample grouped in this laboratory.

Aberdeen and North-East of Scotland Blood Transfusion Service. T. M. ALLAN.

HYPOKALÆMIA IN ACUTE LEUKÆMIA

SIR,—Dr. Videbæk [1] suggests that hypokalæmia, found in two patients with acute leukæmia, may contribute to morbidity in this disease. Many hæmatologists have arrived at the parallel conclusion that often in acute leukæmia the morbidity cannot easily be explained simply by the morphological leukæmic "infiltration" of tissues.

Pronounced potassium depletion as a component of the electrolyte imbalance in all the adaptative diseases, including leukæmia, has been repeatedly reported by me, not only in patients having definitive adrenocorticotherapy, but in those receiving antibiotics.[2] This depletion is not necessarily reflected in demonstrably low serum-potassium levels and the possibility of it should not be dismissed on the ground that the level is normal. One young female patient with acute leukæmia and a serum-potassium of 3·8 m.eq. per litre, was nevertheless found to be excreting in the urine 225–375 m.eq. daily over a two-week period. She was ultimately only brought into potassium balance by daily administration of 20 g. of the chloride. I now administer as a routine 4–8 g. of the enteric-coated tablets to all patients with serious "mesenchymal" or "collagen-vascular" disease.[3]

That patients with a diminished erythrocyte-cholinesterase must inevitably lose potassium from all body cells was pointed out to me by Dr. Margaret Greig over two years ago, as a consequence of her hypothesis that cholinesterases regulate general cellular permeability.[4] Dr. Greig and her students have subsequently shown [5] that reduction of erythrocyte-cholinesterase content results in pronounced diffusion of potassium from erythrocytes. It is in acute leukæmia and in addisonian anæmia that the lowest erythrocyte-cholinesterase levels have been recorded.[6] We can also record with some whimsy that half a century ago Rumpf,[7] reporting the results of chemical tissue analyses from pernicious anæmia subjects, emphasised the general poverty of the body in potassium in that disease and suggested possible therapeutic applications of his finding.

However belated, exploration of the virgin fields of humoral and/or electrolyte imbalance in acute leukæmia may still rescue the science of hæmatology from the advanced insolvency which is still apparent only to certain of its practitioners; this insolvency, brought about by over-confidence in the soundness of obsolete morphological premises, is reflected in the "anti-fol" and nitrogen-mustard debacles.

Laurelton, Long Island, New York, U.S.A. ROBERT D. BARNARD.

1. Videbæk, A. *Lancet*, 1951, ii, 912.
2. *N.Y. St. J. Med.* 1951, **51**, 534.
3. *Hawaii med. J.* (in the press).
4. Greig, M. E., Holland, W. C. *Science*, 1949, **110**, 237.
5. *Arch. Biochem.* 1951, **30**, 241.
6. Barnard, R. D., Sprinz, H., Fitch, H. M., Lehman, R. A., Walker, R. A. *Science*, 1946, **104**, 449.
7. *Berl. klin. Wschr.* 1901, **38**, 477.

COLLEGES AND FACULTIES

SIR,—Others will have appreciated, as I did, the good sense of Dr. G. O. Barber's letter in your issue of Feb. 9. His point that "there is a unity in medicine" and that "the patient should be treated by a team which works closely together" deserves closer examination. Only too often at present the difficult case referred to hospital is passed from specialist to specialist with nobody in charge to direct operations or to take a comprehensive view of the patient.

The therapeutic team clearly requires a captain. Who is it to be? Dr. Barber will probably agree that the proper person ought to be the family doctor. But in order to direct and coördinate the activities of the team the captain must not only know a great deal about the patient; he must also know a great deal of medicine. Moreover, he must be fully conversant with the scope and limitations of the various specialties and, further, with the capabilities and limitations of the specialists available to his patient. Divorced as he so often is at present from hospital medicine, how can the family doctor qualify for the position of captain? But if he cannot, who else can? Since the virtual disappearance of the general physician there is nobody.

Crediton, Devon. L. N. JACKSON.

AN UNUSUAL EPIDEMIC

SIR,—Cases such as you describe in your annotation last week, which may justifiably be diagnosed as "acute labyrinthitis," must be familiar to most neurologists. I find that during the past seven years I have met with some 50 cases at hospital and in consulting practice. The onset of vertigo is almost invariably sudden; and, as with Ménière's syndrome, the first attack is usually the most severe. Vomiting at the onset is common, and nystagmus is often but not invariably present. Nystagmus, however, in my experience, continues for only a short time, usually not longer than a few days, although it may recur during subsequent attacks of vertigo, which nearly always become progressively milder. Slight tinnitus may be present at first (8 out of 50 cases) but does not persist, and any impairment of hearing is unusual. Of the 50 cases 9 showed very mild perceptive deafness which gradually improved. In most cases no incoördination could be demonstrated (only 2 of the 50 cases).

Usually the disorder gradually improves, although symptoms may continue with slowly decreasing intensity for anything from six weeks to nine or, more rarely, twelve months. Nevertheless in cases where recovery takes place quickly, even when the spontaneous attacks of vertigo have ceased the labyrinth may remain somewhat sensitive to sudden changes of posture for some time longer.

The ages of the 50 patients ranged from 23 to 64; I have met with only one case in a younger patient, who was 18 years of age.

Apart from the symptoms described, the diagnosis can only be made by excluding other possible causes of vertigo. Ménière's syndrome is excluded by the absence of any noteworthy or persistent deafness and tinnitus, as well as by the subsequent course. In those cases that it has been possible to follow up recovery has occurred without subsequent symptoms, except in 2 cases, where the patients had a recurrence a few years later.

In 1 case, at first thought to be of acute labyrinthitis on account of the absence of physical signs and the fact that the vertiginous attacks disappeared within six weeks of the onset, the diagnosis subsequently proved to be disseminated sclerosis. In this case signs of an upper-neurone paraparesis appeared two years later.

I have not met with more than one case in a family.

Regarding treatment, a small dose of potassium or sodium bromide (gr. 5–7½ t.d.s.) appears to be quite as efficacious as phenobarbitone (gr. ½), and drowsiness is avoided.

London, W.1. C. WORSTER-DROUGHT.

SIR,—You ask whether other practitioners have been seeing cases of acute labyrinthitis. My interest in this condition was aroused by Professor Meulengracht's [1] suggestion that the illness described in Scandinavian countries as "neuralabyrinthitis epidemica" or "vertigo epidemica" might be occurring in England. In June, 1951, I was able to describe 3 cases occurring in my practice,[2] and Dr. Marguerite Stewart [3] has also described the condition. A short search of English published work only revealed 4 cases, described by Dr. P. A. Walford [4] under the title of "Influenzal vertigo."

I have now seen 12 cases, 6 of which have been severe as described in your annotation. The others have been milder with transient nystagmus and with less pronounced vertigo. These mild cases have been mostly in children under twelve. It is the middle-aged patient who is most severely hit, and who takes longest to recover. A number of mild relapses have been seen between the 14th and 21st days. I have been most impressed by the dramatic response of the vomiting in these cases to 'Avomine' (promethazine-8-chlorotheophyllinate). On the 2nd day the patient may be eating a full meal, yet be unable to sit up in bed without precipitating severe vertigo. My cases have been scattered over a semirural area, and while I have not seen 2 definite cases in one household, I have seen the infection apparently transmitted from one child to his playmate, with an interval of about 28 days.

I have little doubt that this is a generalised virus infection, but I believe proof that it is exclusively a labyrinthitis is lacking. I have therefore used the non-committal name of epidemic vertigo.

Stroud, Gloucestershire. S. CLIFFORD ROGERS.

SIR,—I suggest that the sudden but transient vertigo in the cases you mention was due, not to labyrinthitis, but to changes in labyrinthine pressure from eustachian obstruction—in many cases probably by a small plug of viscid mucus. Such events are quite common, especially in those recovering from mild coryza, and on this account tend to appear in crops. The description you give is fairly typical of this condition with two exceptions (I assume that the "nystagmus of labyrinthine type" was mixed horizontal and rotary, not purely rotary). One unusual feature is the absence of deafness; this absence is not very rare, but among 6 patients one would have expected to find it occasionally. Secondly there was no nausea. For several patients with vertigo, labyrinthine-type nystagmus, and vomiting not to have nausea is really quite extraordinary. It is a pity that we have no account of the appearances or hearing during the acute phase, nor of the effect of inflating the ears, which often affords rapid relief.

These cases are common and alarming; but the fact that the otologist found no evidence of ear disease after recovery should be enough to rule out labyrinthitis, and makes the diagnosis almost certain.

Bristol. E. WATSON WILLIAMS.

1. Meulengracht, E. *Brit. med. J.* 1950, ii, 1493.
2. Rogers, S. C. *Ibid*, 1951, i, 1391.
3. Stewart, M. *Ibid*, ii, 1032.
4. Walford, P. A. *Ibid*, 1949, i, 821.

ADRENAL FUNCTION AND EPILEPSY

SIR,—Last year I reported [1] that diphenylhydantoin sodium ('Dilantin Sodium'), 15 mg. per kg. body-weight per day by intraperitoneal injection, produced degeneration of the adrenal cortex in mice. This effect has since been obtained, over the same period of time, with 9 mg. per kg. body-weight per day—a dose likely to be equivalent pharmacologically to the maximum clinical dose by mouth in man (approximately 6 mg. per kg. body-weight per day).

An observation on an epileptic (a girl, aged 17 years) treated with diphenylhydantoin sodium, 6·3 mg. per kg. body-weight per day, throws further light on the possible action of this compound.

The patient, whose attacks were being controlled, was given calcium aspirin 1·85 g. (approximately 30 mg. per kg. body-weight) per day for three days while the treatment with diphenylhydantoin sodium was continued. During this period the epilepsy was no longer controlled, but when the aspirin was withdrawn the diphenylhydantoin sodium was again effective.

Since salicylates apparently stimulate adrenocortical function,[2] and since A.C.T.H. and compound E increase the severity of 'Agene' epilepsy in dogs,[3] it appears likely that in man the anticonvulsant effect of diphenylhydantoin sodium is due to decreased adrenocortical activity. Further, I suggest that idiopathic epilepsy may result from deranged adrenocortical function—a view supported by the following reported observations:

1. The adrenals of epileptic patients were heavier and contained more cholesterol than those of controls.[4]
2. In rats adrenalectomy diminished the response to convulsive stimuli.[5]
3. In rats deoxycortone acetate reduced the excitability of the central nervous system; the excitability could be restored by simultaneous administration of A.C.T.H. or whole extract of the adrenal cortex.[6]
4. In man deoxycortone acetate has been used with success to treat epilepsy previously controlled by barbiturates.[7]

Whereas the above explanation is the simplest, two alternatives should also be considered: (*a*) that the central nervous system in idiopathic epilepsy is hypersensitive to stressful stimuli in which event adrenal hypertrophy would be expected; or (*b*) that the central nervous system is hypersensitive to adrenocortical hormones.

Department of Zoology, King's College, University of London. P. H. STAPLE.

PSYCHOLOGY AND THE MATERNITY UNIT

SIR,—I have read with great interest the article by Dr. Elizabeth Tylden (Feb. 2). Childbirth should be primarily the concern of the obstetrician. To understand this function it is not necessary to be surgically minded or experienced in the surgical technique required of the gynæcologist. The birth of a child is not a purely pelvic performance although the major part of the apparatus of reproduction is housed in that portion of the body. Every physiological function of woman is directly concerned with pregnancy, parturition, and motherhood.

There is a considerable difference between the obstetrician and the midwife, whether man or woman; the latter is a skilled performer of delivery and those things immediately concerned with the arrival of the child. The obstetrician is a *physician* who understands, so far as modern science allows him, the chemistry, metabolism, and neurology of the body as well as the influence of the mental processes upon normal

1. Staple, P. H. *Lancet*, 1951, i, 1074.
2. Cochran, J. B., Watson, R. D., Reid, J. *Brit. med. J.* 1950, ii, 1411. Robinson, F. B. *Ibid*, 1951, i, 300. Van Cauwenberge, H. *Lancet*, 1951, ii, 686.
3. Costa, P. J., Bonnycastle, D. D. *Fed. Proc.* 1951, **10**, 289. Costa, P. J. Personal communication, 1951.
4. Wendt, G. G. *Arch. Psychiat.* 1949, **183**, 418.
5. Griffiths, W. J. *J. comp. physiol. Psychol.* 1949, **42**, 303.
6. Woodbury, W. J., Chi-Ping Cheng, Sayers, G., Goodman, L. S. *Amer. J. Physiol.* 1950, **160**, 217.
7. McQuarrie, I. *J. clin. Endocrinol.* 1942, **2**, 406; *Amer. J. Dis. Child.* 1946, **72**, 472.

physiological activities. It follows, therefore, that he is familiar with variations within the normal mean of these important contributory factors to successful childbirth. He has an expert knowledge of changes which must be considered abnormal or pathological; these include conditions of the blood, the renal function, the internal secretory glands as well as the heart, the lungs, and the digestive system. But since it has been shown that many of these changes are manifestations of the mental processes of a woman, the psychology of reproduction must essentially be one of the most important aspects in the training of obstetricians. This is more clearly understood if a careful survey is made of the fear-tension-pain syndrome and its implications.

Owing to the trend of modern gynæcological training, there are very few obstetricians in our profession, which at present is satisfied to allow most young mothers of our time to be cared for by midwives and gynæcologists.

When Dr. Tylden writes: "The intrusion of Grantly Dick Read as an obstetrician into the field of psychology has contributed considerably to our understanding," she tells us that her concept of an obstetrician is fallacious. I am neither a psychologist, a neurologist, a dietitian, a hæmatologist, nor a biochemist; but inasmuch as these subjects concern the preparation of women for childbirth and the understanding of the phenomena of parturition, it is necessary to be familiar with certain aspects of each of these branches of our science. The pure psychiatrist, occupied with the investigations that Dr. Tylden is carrying out, is in the same position as the biochemist who endeavours, from his point of view, to tell us exactly what goes on within the woman during pregnancy. Similarly, the hæmatologist who presents us with the normal range of blood changes during the antenatal months and during labour, adds his quota to the obstetrician's knowledge.

I hesitate to accept the suggestion of Dr. Tylden that because I am familiar with these subjects, I am intruding upon biochemistry, hæmatology, and psychology; do I intrude upon dentistry because I diagnose hypertrophic gingivitis in pregnancy, or upon dermatology because I diagnose and treat pruritus vulvæ? It may be that I am an intruder only into obstetrics! Our correct attitude is to appreciate the collaboration of highly specialised scientists who help us to a fuller understanding of the phenomena of pregnancy and labour.

Over 90% of childbearing women are normal, healthy, and happy (if they are allowed to be). A knowledge of the physiology of labour, humanism, and understanding are all that is required for safe and successful parturition. Only 5% need expert gynæcological treatment, to overcome difficulties that they present during labour. The subjects needed for the care of 19 out of 20 women are very scantily taught to students, if at all, and have to be picked up in later life at the expense of women patients. This is a short-sighted educational policy, and until it is corrected obstetric science will not advance as it should.

Dr. Tylden's paragraphs upon the organisation of the labour ward and the disorganisation of the mind of the patient are excellent, and unhappily true. Successful physiological labour can only be obtained if the labour is correctly conducted.

This includes, among other requisites: sound and experienced midwifery; an understanding of the varying physical and emotional phenomena of labour, from the warnings of its onset to the completion of the third stage; concentrated care of the woman's mind to protect it from past associations of hearsay and experience, and to prevent her from being emotionally disturbed by the words or actions of those present; and firm but kindly control of the patient and the situation from beginning to end. This last gives women a sense of understanding and confidence which eliminates anxiety for the ultimate outcome of their efforts.

In my last twenty years it has not been necessary to have one woman subjected to specialist psychological treatment for childbirth. The records show 91·8% physiological, conscious labours with only 2 serious postnatal psychopathies—both patients had previously been in mental homes. We naturally ask "Can the psychologists improve on this?"

May I suggest that the psychologists, whilst continuing their profitable studies of the mental processes of the pregnant woman, turn more seriously to the analysis of the mental and resultant physical activities of those who attend women in childbirth? It is the mentality of the medical and midwifery profession which is withholding from 90% of women of our time fearless childbirth with the minimum of discomfort and the maximum of satisfaction in personal achievement.

Johannesburg. GRANTLY DICK READ.

POISONING FROM PLANTS

SIR,—May I expand Dr. Thomas's note last week on poisoning by water dropwort (*Œnanthe crocata*)? The native members of the order umbelliferæ include two other poisonous plants. Water hemlock (*Cicuta virosa*) contains a picrotoxin-like poison similar to that in water dropwort; but hemlock (*Conium maculatum*) owes its deadly repute to coniine, the action of which is rather different. A playmate of mine (*æt.* about 10) used the stem as a peashooter and nonplussed his medical father by falling asleep during tea. It was the agent reputed to have rid Athens of Socrates, and the account of his last hours does not suggest delirious excitement. Several horses which died in these parts last spring under reasonable suspicion of eating hemlock exhibited stupefaction and incoördination. The taste, by the way, is better than the smell.

If your original correspondent (Jan. 19, p. 155) will extend his peripatesis beyond Chiswick Eyot he will find ample subject for an M.D. thesis in the comparative toxicology of the umbelliferæ; he may even proceed to a doctorate in omphaloscopy.

Taunton. J. A. BOYCOTT.

GASTRIC DILATATION IN POLIOMYELITIS

SIR,—Dr. Hussain, in his article last week on acute dilatation of the stomach as a late complication of poliomyelitis, draws attention to the difficulty of maintaining adequate alveolar ventilation in severely paralysed cases of poliomyelitis nursed in mechanical respirators, and the need for direct measurement of pulmonary ventilation so as to avoid the dangers of hypoventilation with consequent anoxia and carbon dioxide retention.

The most exact management of this type of case would involve analysis of arterial blood for O_2 saturation and plasma CO_2, pH, and pCO_2, and requires access to a Van Slyke blood-gas apparatus and a glass electrode pH meter—equipment not found in many infectious-disease, or general, hospitals. Direct measurement of the ventilation of respirator cases with an ordinary Benedict recording spirometer or Douglas bag and flow-meter is a simple method requiring little apparatus; and, except in subjects with pre-existing chest disease, this could be expected to provide a rapid method of ensuring that respirator ventilation does not become grossly inadequate.

Both oxygen lack and carbon dioxide excess cause similar symptoms of anxiety, restlessness, hypomanic confusional states, sweating, headache, stupor, and coma accompanied by a pronounced increase in cerebral blood-flow and cerebrospinal fluid pressure, and occasionally papilloedema[1]; but they differ in that carbon dioxide causes hypertension without change in cardiac output while anoxia increases cardiac output with no significant change in blood-pressure.[2] Twitching of the small muscles of the face and hands and clonic movements of the limbs and trunk are more often due to

1. Simpson, T. *Brit. med. J.* 1948, ii, 639.
2. Kety, S. S., Schmidt, C. F. *J. clin. Invest.* 1948, **27**, 484.

carbon dioxide excess than to anoxia. It is clear from the clinical history of case 1 in Dr. Hussain's article, where cyanosis, tachycardia, facial spasms, hypertension of 180/120 mm. Hg, and coma developed while the patient was in a Both respirator, that this patient was suffering from the combined effects of both oxygen lack and carbon dioxide excess, and that recovery ensued when the former was corrected by oxygen administration and the latter by increasing pulmonary ventilation. Although oxygen therapy will relieve cyanosis and restore a normal arterial oxygen saturation, it cannot be expected to relieve symptoms due to carbon dioxide excess secondary to inadequate ventilation.

Dr. Hussain is incorrect in stating that carbon dioxide retention leads to a fall in the alkali reserve, and that this may be used as an index of adequate ventilation. In fact, the converse is true. When alveolar ventilation falls below normal the same quantity of metabolic carbon dioxide must be eliminated in a smaller volume of expired air—the alveolar pCO_2 rises with consequent rise in arterial plasma CO_2 and a similar, but quantitatively smaller, increase in the alkali reserve. A reverse sequence of events occurs with prolonged hyperventilation in a respirator.[3] In any case, the alkali reserve is not a very informative estimation since it does not accurately mirror changes in the total plasma CO_2 content in respiratory acidosis and alkalosis. An increase in arterial plasma CO_2 content above 66–70 volumes per 100 ml. (30–31·5 m.eq. per litre) indicates alveolar hypoventilation and provides a useful check on the efficiency of respirator ventilation in providing for elimination of carbon dioxide.

There is considerable evidence to suggest that prolonged exposure to lowered pO_2 and raised pCO_2 has a direct depressant effect on the respiratory centre. Hence, it is reasonable to assume that incorrect management of cases of poliomyelitis with severe medullary involvement in the acute stage, may tip the scales against the eventual recovery of sufficient respiratory neurones for adequate ventilation out of a respirator.

Institute of Diseases of the Chest, Brompton Hospital, London, S.W.3. E. K. WESTLAKE.

HYSTEROSALPINGOGRAPHY IN FEMALE INFERTILITY

SIR,—In his letter of Jan. 26, Dr. Pygott advocates screening in hysterosalpingography, in order to minimise the amount of peritoneal spill and thereby to reduce to a minimum pain from peritoneal irritation. He uses 'Viskiosol Six,' which is a 50% solution of diodone rendered viscous by the addition of 6% polyvinyl alcohol. At the Royal Free Hospital we employ routinely 10 ml. of a simple 35% solution of diodone, such as is used for intravenous pyelography. This solution, in our experience, produces very little peritoneal irritation, and gives excellent skiagrams.

In any case screening introduces radiation hazards, which enormously outweigh any possible advantage gained by using a few millilitres less of contrast medium. With the non-screening technique described by us[4] the dose of X rays to the ovaries ranges from 1·6 to 2 röntgens in an average examination. If a screening technique is employed, not only is a high dosage delivered to the ovaries during the actual screening, but in addition each film taken involves a considerably greater dosage than does a film taken by the non-screening technique. The explanation for this lies in the use of an under-couch X-ray tube for screening; this tube is considerably nearer to the patient than the over-couch tube used in the non-screening technique, and the inverse-square law for intensity of radiation makes a striking difference. When this increased dosage for actual films is added to the screening dosage, a figure of round about 30 r is easily attained, even in expert hands. On genetic grounds the exposure of the gonads of patients in the reproductive phase of life to this heavy dosage is unjustifiable.

Royal Free Hospital, London, W.C.1. ELLA PREISKEL
MARY POLLOCK.

3. Brown, E. B., et al. *J. appl. Physiol.* 1948, **1**, 333.
4. *J. Obstet. Gynaec.* 1951, **58**, 421.

Obituary

MAX HARTMANN

NEWS has been received from Switzerland of the death on Feb. 2 of Dr. Max Hartmann, who long directed pharmaceutical research in Ciba Ltd., Basle. Max Hartmann was born at St. Gallen in 1884, and he studied chemistry and obtained his doctorate at Munich, where he early developed his love and knowledge of art. His shrewd, kindly common sense, his administrative gifts, and his tolerance and understanding made him a valued member of many Swiss institutions besides Ciba. The Swiss Chemical Society made him an honorary member in recognition of his work as treasurer. He was a member of the board and a moving spirit in the establishment of the Swiss Academy, and he devoted much time to the foundations for scholarships in biology and medicine and in chemistry. The University of Basle conferred on him the honorary degree of doctor of medicine, and the Swiss Polytechnical School an honorary doctorate in technical science. The establishment, as a charitable trust, of the Ciba Foundation in London, for the promotion of international coöperation in medical and chemical research, was due to the vision of Dr. Hartmann and his colleagues, and his last visit to this country, in 1949, was to take part, with Sir Henry Dale, in its opening ceremony.

Max Hartmann's modesty and kindliness made him a most sympathetic and encouraging director of research, and he made sure that the fullest credit was given where it was deserved. Of his many outstanding contributions to pharmaceutical research, 'Coramine' is perhaps the best known, and his leadership always brought to the fullest health and fruition the researches of those who worked with him.

G. E. W. W.

Appointments

CLARK, ALEXANDER, M.B. Glasg., D.P.M.: asst. psychiatrist, Storthes Hall Hospital, Kirkburton, and associated clinics.
HOUSTON, FREDERICK, M.R.C.S., D.P.M.: asst. psychiatrist, De la Pole Hospital, near Willerby, and associated clinics.
PIERCE, J. W., M.D. Lond., M.R.C.P., D.M.R.D.: consultant radiologist (diagnostic), Brompton Hospital, London.
REA, G. H., M.B. St. And., D.A.: asst. anæsthetist, Royal Infirmary, Edinburgh, with duties within the Scottish South-Eastern region.

South-East Metropolitan Regional Hospital Board:

BULLOUGH, JOHN, M.B. Lond., D.A.: consultant anæsthetist, Dartford group of hospitals.
FITZGERALD, M. A., M.B. N.U.I., D.M.R.: consultant radiologist, Hastings group of hospitals.
FORSAITH, J. R., M.R.C.S., D.A.: consultant anæsthetist, Canterbury and Isle of Thanet groups of hospitals.
LEIBERMAN, D. M., M.D. Leeds, M.R.C.P., D.P.M.: consultant psychiatrist, Bexley group of hospitals.
MCGRATH, G. D., M.B. N.U.I., D.A.: consultant anæsthetist, South-East Kent group of hospitals.
MORRISON, N. D. W., M.R.C.S., D.M.R.D.: consultant radiologist, Lewisham group of hospitals.
WATSON, W. R., M.R.C.S., D.A.: consultant anæsthetist, Brighton and Lewes, and Eastbourne groups of hospitals.

Appointed Factory Doctors:

AUCUTT, W. H., M.B. Birm.: Dartmouth district, Devonshire.
CUTLER, M. J., M.B. Lond.: Hastings district, Sussex.
JONES, D. J., M.R.C.S.: Narberth district, Pembrokeshire.
PRICE, J. E., L.R.C.P.E.: Llandovery district, Carmarthenshire.

The Terms and Conditions of Service of Hospital Medical and Dental Staff apply to all N.H.S. hospital posts we advertise, unless otherwise stated. Canvassing disqualifies, but candidates may normally visit the hospital by appointment.

The 1952 edition of *Appointments in His Majesty's Colonial Service* is obtainable from H.M. Stationery Office, price 3*s.* 6*d.*

Notes and News

HOSPITAL PRAYERS

PATIENTS in hospital are much exposed to anxiety, and unfortunately have a good deal of time to contemplate it. There is reason to think that many of them find morning prayers friendly and reassuring, especially if the prayers chosen take account of their immediate needs and fears. The General Hospital, Nottingham, with this in mind, has published *A Collection of Prayers for Use in Hospitals*, and is generously issuing 4000 copies free of cost to all who care to apply for them, provided they are willing to pay for postage and packing.[1]

In the foreword the compilers of the book suggest that a short morning service can be broadcast from the hospital chapel, and that all in the wards can listen, though the staff need not interrupt their work. They feel that the hospitals are intended for the healing of body, mind, and spirit; and that there is an opportunity, in these services, to approach some who can be reached in no other way. They suggest prayers for 31 days, and, though several prayers recur, there is freshness and variety. The book is largely modelled, they say, on *New Every Morning*, published by the British Broadcasting Corporation.

While many of the prayers are good, short, clear, and appropriate, some are perhaps too long and abstract to appeal to those who come newly to the idea of any prayers at all. The *Book of Common Prayer*, which owes so much to Cranmer's mastery of English, hardly gets a showing: even the prayers for special occasions are derived from unfamiliar sources when they might have been the collects for the days. But the compilers may well have decided to make the book as undenominational as possible, and they may therefore have chosen unfamiliar prayers deliberately. In any case they have provided many blank pages for those who wish to add prayers of their own choosing.

The book is well printed and agreeably and serviceably bound. The compilers and the Nottingham General Hospital deserve thanks for their generosity and public spirit, as well as respect for their purpose.

TRAPS AND RABBITS

THE Home Office committee on cruelty to wild animals found the gin-trap "a diabolical instrument which causes incalculable suffering," and recommended that it should be banned by law within a short time. Yet Lord Elton's Bill for the prohibition of these traps was defeated on Nov. 28 last year.

At the annual meeting of the Universities Federation of Animal Welfare Societies (UFAW), Major C. W. Hume described this as the loss of a battle but not of the war. Rabbits, in the numbers which share the island with us now, are undoubtedly a pest; but their profusion is being artificially maintained, he explained, by the rabbit-trapping industry. If this industry could be killed, and its stock of rabbits got rid of, the increased production of bread, beef, and mutton, and the saving of forest trees would far outweigh the loss of these "edible rodents infested with tapeworms." People engaged in this industry make great use of the gin-trap, which cannot possibly kill a rabbit outright (though about half die of shock during the ensuing night). Of 222 trapped rabbits examined by Miss W. Phillips, all had one leg broken; 73 had two legs broken. The rabbit-trapping industry is thus inevitably cruel; but it is also parasitic on, and a menace to, the country's food-supply. Study of commercial trapping campaigns show that the trappers catch only roughly a third of the rabbit population, leaving the rest to breed and prey on crops. Moreover, the animals which prey on rabbits are also exposed to the traps. Humane traps will not solve these additional problems; and indeed, Major Hume says, well-meant propaganda about humane traps has proved a regrettable red-herring.

UFAW advocates a policy of rabbit clearance by appropriate humane, or relatively humane, methods. This would kill the rabbit-trapping industry but would benefit the domestic-rabbit breeders, whose stock is both more wholesome and more palatable. A centrally organised campaign could reduce rabbit populations in areas large enough to prevent rapid reinfestation; and farmers could be legally required to keep down the residual rabbits when the initial clearance had been done.

Clearance must be paid for, and unfortunately pest-control services are required to pay for themselves, in spite of the Agriculture Act, 1947. Thus on the whole, rabbit clearance is at present half-hearted and unsuccessful, besides being hindered by the effective passive resistance of the rabbit-trapping industry. Major Hume is confident that expenditure on rabbit clearance would be justified by the increase in food-production.

HERITAGES

OUR tradition in medicine is a heritage which we all value. Mr. H. J. Seddon, F.R.C.S., in a pamphlet on The Christian Heritage in Medicine,[1] reminds us how closely this tradition is a part of the whole inheritance of Christendom. There were hospitals in the pre-Christian era, certainly, but after the reign of Constantine, when Christianity was officially recognised by the State, the Church all over the world took over the care of the sick; the like duty was accepted by the Order of the Knights of St. John of Jerusalem, and it is still the inspiration of many religious orders and of the missionary hospitals, to which he pays great tribute. The breach between medicine and the Church in the last century came about, he says, because both the scientists and the Church thought they knew the answers to everything. Both sides were too confident; but in this century "we are much more humble, because we no longer believe—and we have very good reason for not believing—in the inevitability of progress."

This led him, like many others, to examine our Christian heritage afresh, and to try to clear his mind of misconceptions about it. He draws special attention to three of these. First, he says, the whole of Christianity has been overlaid by a thick fog of superstition. Then, Christian theology has become a highly complicated affair: "I know nothing more depressing than to walk into the library of a theological don." Thirdly, we should banish from our minds the sordid history of the "political church"; "there will always be, so long as man is on this earth, the Judases and the Vicars of Bray," We would not wish our heritage and tradition in medicine to be judged by the behaviour of the meanest or even the average practitioner: "We prefer to consider it in terms of the best people." The Christian tradition embraces, he says, "a Person, a Way of Life, a Book." In the last century everyone was familiar with the Bible; and even if he had only listened with half-shut ears, it gave him, as Sir Richard Livingstone has put it, some more permanent guide to living than "the film and the cheap press uttering loudly and with the confusion of many inharmonious voices such doctrines as the prospect of immediate profit inspires." That kind of guidance, Professor Seddon suggests, cannot help us to combat the dangers confronting us, nor is the struggle one into which we can enter entirely in our own strength.

Medicine offers so many kinds of life that its integration with the Christian heritage differs for different doctors. The scientist who must undertake controlled experiments is in danger of thinking of his patients much as he does of his test-tubes and reagents; yet Mr. Seddon believes that it is possible to be a good medical scientist and yet a completely human person. Some medical practitioners are inclined, in the same way, to regard the human body simply as a machine. "It would hardly be appropriate to talk to a patient about his soul when he comes complaining of a painful bunion, but the attitude of not caring at all about the spiritual side of medical practice is completely wrong." Even in public health, and especially perhaps in public health among primitive peoples, the success or failure of a campaign may depend on personal—essentially, spiritual—qualities.

His recipe for developing this side of life is so old-fashioned as to be almost new. He recommends the Bible as a text-book, prayer, and regular attendance at some place of worship with other Christian people.

Association of Whole-time Salaried Specialists

The first annual dinner of this association was held at the Royal College of Surgeons on Jan. 25. The guests included Sir Max Page, representing the Royal College of Surgeons; Mr. R. E. Jowett, president of the Regional Hospitals' Consultants and Specialists Association; and Mr. J. M. Milloy, of the Medical Superintendents' Society.

1. The cost of these ranges from 1*s.* for 1 copy of the book to 2*s.* 4*d.* for 12. Those who wish to make some further contribution are free to subscribe to the patients' and staff comforts fund.

1. London: The Inter-Varsity Fellowship, 39, Bedford Square, W.C.1. Pp. 16. 6*d.*

Eugenics Society

The meeting of this society which was to be held today, Friday, Feb. 15, has been postponed till April 4.

First International Congress of Dietetics

This congress is to be held from July 7 to 11 at the Royal Tropical Institute, Amsterdam. Inquiries should be addressed to Miss Diane J. Ten Haaf, general secretary of the executive committee, 13, Pomonaplein, The Hague, Netherlands.

W.H.O. Team in South-East Asia

Prof. E. W. H. Cruickshank, Dr. H. O. Schild, and Dr. E. Rohan Williams are touring South-East Asia as members of a W.H.O. team who are lecturing and doing practical work in hospitals and university departments. The tour will end in Ceylon on April 6.

Royal Statistical Society

A Frances Wood Prize (£30) is offered for the best "investigation, on statistical lines, of any problem bearing directly or indirectly upon the economic or social conditions of the people." Competitors must be under 30 on Jan. 1, 1952, but need not be fellows of the society. Entries must be sent to the hon. secretaries of the society, 4, Portugal Street, London, W.C.2, not later than Dec. 31.

Frustration and Fulfilment

An Easter School on this subject will be held at the Davidson Clinic, Edinburgh, from March 26 to April 1. Speakers will include Dr. Winifred Rushforth, Dr. W. P. Kraemer, and other members of the staff of the clinic, with Dr. Margaret Lowenfeld, director of the Institute of Child Psychology, London, as guest lecturer. Further information may be had from the secretary, 58, Dalkeith Road, Edinburgh, 9.

National Foot Health Week

During the second National Foot Health Week, which is to be held this year from June 16 to 21, there will be a four-day exhibition at the Army & Navy Stores, Victoria Street, London, S.W.1, with a special section on "Women at Work." A series of popular lectures will also be given. Further particulars may be had from the press office, 121, Ebury Street, S.W.1.

CORRIGENDUM: *Accidental Spinal Injection of Xylocaine.*—In some copies of last week's issue the words "hypobaric," "isobaric," and "hyperbaric," contained in Dr. H. Barrie Fairley's letter (p. 316) were mis-spelt.

Oxygenaire Ltd.—This company's London telephone number has been changed to Welbeck 4477.

Births, Marriages, and Deaths

BIRTHS

BUXTON.—On Feb. 5, at Los Angeles, the wife of Dr. Nigel Buxton, of Upton House, Cromer—a daughter.
EPSTEIN.—On Feb. 5, in London, the wife of M. A. Epstein, M.A., M.D.—a daughter.
FOREMAN.—On Feb. 2, the wife of Dr. H. M. Foreman, of Dinas Powis, Glamorgan—a daughter.
HELPS.—On Feb. 8, in London, the wife of Dr. E. P. W. Helps—a daughter.
STRACH.—On Feb. 8, at Wigan, the wife of Mr. E. H. Strach, F.R.C.S.—a daughter.

MARRIAGES

ALTON—OSBORNE.—On Nov. 22, at Carson City, Nevada, U.S.A., Harry Alton, M.D., of San Francisco, U.S.A., to Mahmea Enid Lolita Osborne.
HENDRIE—OAKLEY-EVANS.—On Feb. 8, in London, John Hendrie, L.R.C.P.E., to Sylvia Hildred Oakley-Evans.
MILLER—FERGUSON.—On Feb. 9, Robert F. Miller, M.B., of Paisley, to Sheila Vida Ferguson.
PENDER—MACKLIN.—On Feb. 9, in London, Bruce Wolfe Tresilian Pender, F.R.C.S., to Jean Helen Macklin.

DEATHS

BODINGTON.—On Feb. 5, at Winchester, Arthur Eaton Bodington, M.D. Camb., aged 87.
FRASER.—On Feb. 7, at Hove, Charles Fraser, M.D. Edin., aged 79.
HOWARD TRIPP.—On Feb. 2, Charles Llewellyn Howard Tripp, M.R.C.S., late of Bude, Cornwall, aged 94.
O'NEILL.—On Feb. 2, Charles Sefton O'Neill, O.B.E., M.D. Manc., of Hale, Cheshire, aged 70.
POLLARD.—On Jan. 29, at Edgbaston, Walter Henry Pollard, M.B. Lond., aged 84.
SCOTT.—On Feb. 4, at Truro, Cornwall, Frank Scott, M.B. Lond., aged 68.

Diary of the Week

FEB. 17 TO 23

Monday, 18th

MEDICAL SOCIETY OF LONDON, 11, Chandos Street, W.1
8.30 P.M. Mr. R. C. Brock: Surgery of the Heart and Great Vessels. (First of three Lettsomian lectures.)

Tuesday, 19th

BRITISH POSTGRADUATE MEDICAL FEDERATION
5.30 P.M. (London School of Hygiene, Keppel Street, W.C.1.) Sir Robert Robinson, O.M., F.R.S.: Chemical Aspect of Antibiotics.
INSTITUTE OF DERMATOLOGY, St. John's Hospital, Lisle Street, W.C.2
5.30 P.M. Dr. P. D. Samman: Parapsoriasis and Poikilodermia Atrophicans Vasculare.
WEST END HOSPITAL FOR NERVOUS DISEASES, 40, Marylebone Lane, W.1
5.30 P.M. Dr. N. G. Hulbert: Neurology demonstration.
MIDDLESEX COUNTY MEDICAL SOCIETY
3 P.M. (North Middlesex Hospital, Silver Street, N.18.) Dr. I. S. Collins: A Syndrome resembling Hæmophilia due to a Circulating Anticoagulant.

Wednesday, 20th

UNIVERSITY OF LONDON
5.30 P.M. (Institute of Education, Malet Street, W.C.1.) Mr. J. H. Schulman, SC.D.: Molecular Interactions at Interfaces. (First of three lectures in pharmacy.)
INSTITUTE OF DERMATOLOGY
5.30 P.M. Dr. R. W. Riddell: Mycology—Treatment of Fungus Infections.

Thursday, 21st

UNIVERSITY OF LONDON
5.30 P.M. (Institute of Education.) Dr. Schulman: Molecular Interactions at Interfaces. (Second of three lectures in pharmacy.)
ROYAL COLLEGE OF SURGEONS, Lincoln's Inn Fields, W.C.2
5 P.M. Dr. S. P. Meadows: Carotid-cavernous Aneurysms and Pulsating Exophthalmos. (Hunterian lecture.)
BRITISH POSTGRADUATE MEDICAL FEDERATION
5.30 P.M. (London School of Hygiene.) Prof. H. D. Kay, D.SC., F.R.S.: Recent Light on Mammary Function.
ROYAL SOCIETY OF TROPICAL MEDICINE AND HYGIENE
7.30 P.M. (26, Portland Place, W.1.) Prof. P. A. Buxton, F.R.S.: Insecticides.
BRITISH INSTITUTE OF RADIOLOGY, 32, Welbeck Street, W.1
8 P.M. Mr. R. W. Stanford, Mr. S. B. Osborn, Mr. Alma Howard, PH.D.: The Genetic Hazard of Diagnostic Examination.
INSTITUTE OF CHILD HEALTH, Hospital for Sick Children, Great Ormond Street, W.C.1
5 P.M. Mr. T. Holmes Sellors: Patent Ductus Arteriosus and Pulmonary Stenosis.
ROYAL ARMY MEDICAL COLLEGE, Millbank, S.W.1
5 P.M. Dr. W. Russell Brain, F.R.C.P.: The Neurology of the Cervical Spine.
ST. GEORGE'S HOSPITAL MEDICAL SCHOOL, Hyde Park Corner, S.W.1
4.30 P.M. Neurology demonstration.
MANCHESTER MEDICAL SOCIETY
4.30 P.M. (University of Manchester.) Dr. D. Evan Bedford: The Art of Feeling the Pulse.
LIVERPOOL MEDICAL INSTITUTION, 114, Mount Pleasant, Liverpool, 3
8 P.M. Prof. Andrew Wilson: Myasthenia Gravis.
UNIVERSITY OF ST. ANDREWS
5 P.M. (Medical School, Small's Wynd, Dundee.) Prof. F. H. Bentley: Management of Massive Gastroduodenal Bleeding.

Friday, 22nd

UNIVERSITY COLLEGE, Gower Street, W.C.1
5.30 P.M. Mr. F. Bergel, D.SC.: British Contributions in the Field of Pharmaco-therapeutics.
INSTITUTE OF DERMATOLOGY
5.30 P.M. Dr. Samman: Reticuloses—clinical demonstration.
INSTITUTE OF DISEASES OF THE CHEST AND INSTITUTE OF CARDIOLOGY
5.30 P.M. (London School of Hygiene.) Dr. Graham Hayward: Patent Ductus Arteriosus and Coarctation.
BRITISH INSTITUTE OF RADIOLOGY
5 P.M. Meeting of medical members.
6.30 P.M. Mr. H. A. B. Simons, PH.D.: Use of Nuclear Research Emulsions for Fast Neutron Dosimetry.
MANCHESTER MEDICAL SOCIETY
4.30 P.M. (University of Manchester.) Professor Klein (Strasbourg): Steroid Hormones and Behaviour.

EMERGENCY BED SERVICE.—In the week ended last Monday applications for general acute cases numbered 1209. The proportion admitted was 85·5%.

"Fougasse," chairman of the Universities Federation for Animal Welfare (UFAW), is to broadcast an appeal for the funds of the federation on Sunday, Feb. 24, at 8.25 P.M. Behind the notable pencil name stands the editor of *Punch*, and behind him again is Mr. Kenneth Bird, whose friendship for animals goes deeper than mere pleasure in a variety of spirited models.

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Notes on High-Protein Diets

(1)

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In the treatment of obesity by dietary correction the intake of calories should be limited to between 1,000 *and* 1,200 *calories a day, and the patient should be supplied with optimum quantities of protein, vitamins and minerals. Thus the patient is forced to live for a time on his own fat resources and weight falls.*

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At least 65 grams of protein should be given daily in order to ensure replacement of that lost by daily catabolic processes and to enable the patient to burn his own fat. In addition, protein has a high-specific dynamic action and a role in thyroid function.

Owing to the rather meagre dietary allowance available today, the most practical method of guaranteeing this daily amount of protein is to add Sanatogen protein supplement to the patient's diet. Sanatogen contains 95% casein combined with 5% sodium glycerophosphate and has a specific nutrient and tonic action. It supplies all the essential amino acids together, has a high rate of utilisation, and is easily digested and rapidly absorbed.

Sanatogen is the only proprietary protein supplement containing neither fats nor carbohydrate. The fact that animal protein is normally closely associated with fat enhances the value of fat-free Sanatogen in obesity diets.

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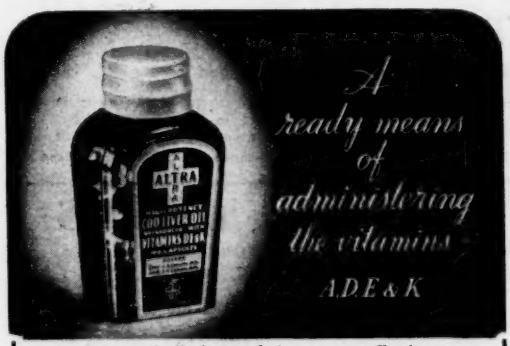

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This Registered Hospital is situated in 130 acres of park and pleasure grounds. Voluntary patients, who are suffering from incipient mental disorders or who wish to prevent recurrent attacks of mental trouble; temporary patients, and certified patients of both sexes are received for treatment. Careful clinical, biochemical, bacteriological, and pathological examinations. Private rooms with special nurses, male or female, in the Hospital or in one of the numerous villas in the grounds of the various branches can be provided.

WANTAGE HOUSE

This is a Reception Hospital in detached grounds with a separate entrance, to which patients can be admitted. It is equipped with all the apparatus for the complete investigation and treatment of Mental and Nervous Disorders by the most modern methods; insulin treatment is available for suitable cases. It contains special departments for hydrotherapy by various methods, including Turkish and Russian baths, the prolonged immersion bath, Vichy Douche, Scotch Douche, Electrical baths, Piombières treatment, etc. There is an Operating Theatre, a Dental Surgery, an X-ray Room, an Ultraviolet Apparatus, and a Department for Diathermy and High-frequency treatment. It also contains Laboratories for biochemical, bacteriological, and pathological research. Psychotherapeutic treatment is employed when indicated.

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For terms and further particulars apply to the Medical Superintendent (TELEPHONE: Northampton 4354 (3 lines)), who can be seen in London by appointment.

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Academic and Educational

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A Lecture on "ANTIDIURETIC EFFECTS OF BLOOD AND URINE IN RELATION TO NEUROHYPOPHYSIAL SECRETION" will be given by Prof. H. B. VAN DYKE (Columbia University) at 5 P.M. on 25TH FEBRUARY, at University College (Physiology Theatre), Gower-street, W.C.1.

Admission free, without ticket.

JAMES HENDERSON, Academic Registrar.

UNIVERSITY OF LONDON

A Lecture on "THE PATHOLOGY AND TREATMENT OF PORTAL HYPERTENSION" will be given by Prof. R. MILNES WALKER (Bristol) at 5.30 P.M. on 26TH FEBRUARY, at Westminster Medical School (Meyerstein Lecture Theatre), Horseferry-road, S.W.1.

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ROYAL COLLEGE OF PHYSICIANS OF LONDON

CHARLES MURCHISON SCHOLARSHIP IN CLINICAL MEDICINE

The next Examination for this Scholarship will be held at the Examination Hall, 8–11, Queen-square, W.C.1, on WEDNESDAY, 11TH JUNE, 1952.

The examination is open to any student of medicine, whether holding a medical qualification or not, who, subsequently to the date of passing his professional examination in anatomy and physiology for a medical qualification, commenced clinical studies not less than 2½ and not more than 5 years previously at a medical school in London, recognised by the Royal College of Physicians, or at the University of Edinburgh, including medical classes recognised by the Medical Faculty of the University.

The Scholarship is of the value of 20 guineas and is tenable for 1 year.

Intending candidates are required to send their names to the Registrar of the Royal College of Physicians, Pall Mall East, London, S.W.1, not later than Wednesday, 28th May, 1952, with evidence of the duration of their medical studies from the Deans of their respective schools and evidence of the date at which they passed their examination in anatomy and physiology.

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FACULTY OF ANÆSTHETISTS

ROYAL COLLEGE OF SURGEONS

A course of 40 Lectures in ANÆSTHETICS will be given at the College from 24TH MARCH–4TH APRIL, 1952. Fee £15 15s.

A series of Tutorials in Anæsthetics will be held during the same period and will consist of 10 one-hourly sessions commencing 5.30 P.M. Fee £10 10s.

For further details, apply to the Secretary, Faculty of Anæsthetists, Royal College of Surgeons of England, Lincoln's Inn-fields, London, W.C.2 (HOLborn 3474).

FACULTY OF ANÆSTHETISTS

PHARMACOLOGY LECTURES

A short course of 10 Lectures in Pharmacology will be given by Dr. H. C. STEWART and Dr. A. H. GALLEY. This course will take place at the Royal College of Surgeons from 21ST–25TH APRIL and there will be 2 Lectures each day, one at 5 P.M. and the other at 6.15 P.M.

The fee for these Lectures will be £2 2s. or 5s. per lecture.

Applications should be made to the Secretary, Faculty of Anæsthetists, Royal College of Surgeons of England, Lincoln's Inn-fields, W.C.2 (HOLborn 3474).

UNIVERSITY OF GLASGOW

Applications are invited for I.C.I. RESEARCH FELLOWSHIPS in Biochemistry, Chemistry, Engineering, Pharmacology, or Physics, to which some appointments may be made during the current academic year. The appointments will date from 1st October, 1952 (or earlier in the case of selected candidates who may be available before that date). The salary will depend upon qualifications and experience, but will be within the range £600–£900 p.a., together with F.S.S.U. benefits and family allowances.

Applications (8 copies), with a list of publications and names of 2 referees, should be sent not later than 31st March, 1952, to the undersigned, from whom further particulars may be obtained.

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THE UNIVERSITY OF SHEFFIELD

POSTGRADUATE COURSE IN MICROBIOLOGY

A 1 year full-time course, leading to a Diploma in Microbiology, will start in OCTOBER, 1952. The course will cover the biology and biochemistry of the bacteria and yeasts and fungi. Candidates who already hold the degree of B.Sc. with honours may read for the degree of M.Sc.

The number of places is limited and applications for admission, with details of previous training, should be made to the undersigned, from whom further information may be obtained, by 31st May, 1952. A. W. CHAPMAN, Registrar.

EDINBURGH POST-GRADUATE BOARD FOR MEDICINE

GENERAL SURGERY

A 3-months course of Postgraduate Surgery is arranged to start on 24TH MARCH, 1952. It is suitable for surgeons requiring a refresher course in the current outlook on general surgery; or for graduates preparing to specialise in surgery; approximately 275 hours of instruction are provided. A similar course will be held starting on 29th September, 1952. Fee £31 10s.

INTERNAL MEDICINE

A course lasting 12 weeks, suitable for graduates wishing a refresher course, or to specialise in medicine, begins on 31ST MARCH, 1952. These courses consist of 320 hours instruction, comprising lectures, clinical demonstrations, and ward visits. A similar course begins on 29th September, 1952. Fee £31 10s. Additional instruction in Clinical Paediatrics is arranged in conjunction with the course in medicine, for which there is a small fee; the numbers are limited.

MEDICAL SCIENCES

A 3-months course in Applied Anatomy, Physiology, Pathology, Bacteriology, and Biochemistry will begin on 30TH JUNE, 1952. This course is suitable for postgradutes wishing to take the Primary Fellowship examination, as a final preparation in these subjects. Considerable basic knowledge is highly desirable prior to taking this course. Fee £31 10s.

Applications for enrolment should be addressed to Director of Postgraduate Studies, Surgeons' Hall, Edinburgh, 8, supplying particulars of qualifications and postgraduate experience.

BEIT MEMORIAL FELLOWSHIPS FOR MEDICAL RESEARCH

Notice is hereby given that an Election of Junior Fellows to begin work on 1ST OCTOBER next will take place in June, 1952. Junior Fellowships are of the annual value of £600 for 3 years, with, in certain circumstances, superannuation benefits to which the successful candidate will be required to contribute 5% of annual stipend and to which the Trust will make a contribution of 10%. Candidates must have taken a degree in a faculty of a university in Her Majesty's Dominions, Protectorates, and Mandated Territories, India, Pakistan, and the Republic of Ireland, approved by the Trustees, or a medical diploma registrable in the United Kingdom. Elections to Junior Fellowships are rarely made above the age of 35 years.

Applications from candidates must be received not later than 14th April. Candidates must submit evidence that they can be given accommodation in the departments where they propose to work, which must be either in Great Britain or Ireland. Forms of application and all information may be obtained by letter only, addressed to the Secretary, Beit Memorial Fellowships for Medical Research, The Lister Institute, Chelsea Bridge-road, London, S.W.1. For overseas candidates forms of application may be obtained from the Secretary, South African Medical Council, P.O. Box 205, Pretoria, South Africa; the Secretary, Universities Commission, Box 4061, G.P.O., Sydney, Australia; The Department of Health, Wellington, New Zealand; and the Canadian Medical Association, 184, College-street, Toronto, Canada.

GONVILLE AND CAIUS COLLEGE, CAMBRIDGE

BERKELEY BYE-FELLOWSHIP

Founded in memory of Sir G. H. A. Comyns Berkeley and of his wife, Ethel Rose Berkeley)

The Council of Gonville and Caius College invite applications for a Berkeley Bye-Fellowship for research in either of the following fields:—

(1) Medicine.

(2) Any branch of Natural Science, excluding Medicine.

Candidates should be men of not less than 26 years of age. The tenure of the Bye-Fellowship is from 1–3 years and the emolument from £500–£1000 according to standing. Full particulars may be obtained from the Registrary, Gonville and Caius College, Cambridge.

Applications must be received not later than 1st April, 1952.

TANCRED'S STUDENTSHIPS

DIVINITY : MEDICINE : LAW

£100 p.a. each. For Men only

About Whitsuntide next the Governors propose to elect 1 Student in Physic at Gonville and Caius College, Cambridge, and 1 Student in Law at Lincoln's Inn.

Candidates must have been born in England, Scotland, or Wales and be members of the Church of England and unmarried.

An examination will be held at Caius College on Wednesday, 16th April, 1952, for Physic candidates who must be within the ages of 17 and 22 years. The Law candidates, who must be within the ages of 20 and 23 years, must have passed an approved examination of School Certificate standard.

The last day for sending in Petitions for the Physic and Law Studentships is 11th March, 1952.

A Divinity Studentship will be awarded later in the year, on the result of the Scholarship Examinations conducted in December by the Queen's, Christ's, St. John's, Emmanuel and Sidney Sussex Group of Colleges, in the University of Cambridge. A further announcement relating to the Divinity Studentship will appear in this paper in September.

Apply for further particulars and form of Petition, stating kind of Studentship and mentioning this paper, to the Clerk, R. M. C. HOWARD, Esq., D.S.O., 28, Lincoln's Inn-fields, London, W.C.2.

INSTITUTE OF UROLOGY in association with St. Peter's AND ST. PAUL'S HOSPITALS. Part-time BIOCHEMIST (medical qualification not essential) required to undertake research and laboratory investigation in connection with urological disease. Graduates of at least 2 years standing may apply. Appointment (approximately half-time) might suit applicant engaged in preparing thesis for higher degree. Salary commencing at £450 p.a.

Apply: Secretary, St. Paul's Hospital, Institute of Urology, Endell-street, W.C.2, stating age, qualifications, and experience, enclosing copies of 2 recent testimonials. Closing date 25th February, 1952.

THE WELSH NATIONAL SCHOOL OF MEDICINE. UNIVERSITY OF WALES. Applications are invited for the appointment of ASSISTANT LECTURER (full-time) in the Department of Obstetrics and Gynæcology for a period of 1 year in the first instance. Salary within the range £650–£100–£950 p.a., with participation in family allowance and superannuation schemes.

Further particulars of the appointment may be obtained from the undersigned, by whom applications must be received not later than Saturday, 8th March, 1952.

34, Newport-road, Cardiff. F. DODSWORTH, Secretary.

UNIVERSITY OF SYDNEY. Applications are invited for the position of SENIOR LECTURESHIP IN PHARMACOLOGY. The above vacancy arises from a decision to establish a permanent lectureship in place of a temporary appointment. Salary will be within the range of £A650–£A50–£A1000, with the addition of cost-of-living adjustment (at present £A159 males, £A121 females). Salary will be subject to deductions under the State Superannuation Act. The commencing salary will be fixed according to the qualifications and experience of the successful candidate.

Further particulars and information as to the method of application may be obtained from the Secretary, Association of Universities of the British Commonwealth, 5, Gordon-square, London, W.C.1. The closing date for the receipt of applications is 3rd March, 1952.

NEW YORK. ALBANY HOSPITAL, associated with ALBANY MEDICAL COLLEGE. FELLOWSHIP IN TUBERCULOSIS available at above, beginning 1st July, 1952, for a period of 12 months.

Apply Albany Hospital, Albany, New York.

Hospital Services : Senior Appointments

(See Note under Appointments, p. 374 of Text.)

MANOR HOUSE HOSPITAL (exempted from National Health Service) invite applications for a resident Full-time PHYSICIAN for their Rehabilitation Centre, Clapham Park, Bedford. Candidates should hold a Diploma in Physical Medicine and have had experience of rehabilitation. Commencing salary £1300 a year, rising by increments of £50 to £1750 a year, less charge for residential emoluments to be fixed by agreement.

Applications, with copies of 3 testimonials, to be forwarded to the Secretary, Manor House Hospital, Golders Green, N.W.11.

NORTH EAST METROPOLITAN REGIONAL HOS-PITAL BOARD. Applications are invited for the following Consultant positions :—

(1) Part-time CONSULTANT RADIOLOGIST.
Mildmay Mission Hospital, Austin-street, E.2 (2 sessions a week). Candidates are required to be in sympathy with the evangelical aims of this Hospital.

(2) Part-time CONSULTANT RADIOLOGIST.
Plaistow Hospital, Samson-street, Plaistow, E.13 (2 sessions a week).

(3) Part-time CONSULTANT RADIOLOGIST.
Forest Hospital, Roebuck-lane, Buckhurst Hill, Essex (3 sessions a week).

(4) Part-time CONSULTANT RADIOLOGIST.
Clayburv Mental Hospital, Woodford Bridge, Essex (1 session a week).

(5) Part-time CONSULTANT DERMATOLOGIST.
Prince of Wales's General Hospital, South Tottenham, N.15 (2 sessions a week).

Separate applications (6 copies or 9 copies if for more than 1 post), indicating post concerned, and stating private address, date of birth, full details of qualifications, and experience, present appointment(s) (including number of sessions), grade, and salary, together with names and addresses of 3 referees, should reach C. E. NICOL, Secretary, 11A, Portland-place, London, W.1, by Saturday, 1st March, 1952.

SOUTH EAST METROPOLITAN REGIONAL HOS-PITAL BOARD. Applications are invited for an appointment as Part-time CONSULTANT in Physical Medicine to undertake 9 notional half-days a week, divided between the under-mentioned 3 groups of hospitals :—

Bromley, 2 notional half-days.
Sidcup and Swanley, 2–3 notional half-days.
Lewisham, 4–5 notional half-days.

Large orthopædic and traumatic units are included in these groups. Candidates should have had considerable practice in the specialty and possess a higher qualification, preferably an appropriate diploma or membership of the Royal College of Physicians. Applicants may visit the hospitals concerned.

Apply, stating nationality, age, sex, qualifications, and experience, including details of present appointment and of war service, together with the names and addresses of 3 referees, to the Secretary, Advisory Appointments Committee, South East Metropolitan Regional Hospital Board, 11, Portland-place, London, W.1. The last day for acceptance of applications will be 29th February, 1952.

Provincial

For appointments of Part-time Consultant Radiologists at Forest Hospital, Buckhurst Hill, and Claybury Mental Hospital, Woodford Bridge, see North East Metropolitan Regional Hospital Board advertisement with London appointments.

EXETER CLINICAL AREA. South-Western Regional HOSPITAL BOARD. Applications are invited from registered medical practitioners for the appointment of ASSISTANT RADIOTHERAPIST in the Exeter Clinical Area. The appointment will be on a whole-time basis in the Senior Hospital Medical Officer grade. Applicants should possess high medical qualifications, and have had previous experience in radiotherapy. The successful candidate will be required to work under the general direction of the Consultant Radiotherapist mainly at the Royal Devon and Exeter Hospital, Exeter, but may be required to work at other hospitals in the Clinical Area as determined by the Regional Board from time to time. Opportunities for experience in radioactive isotope work will be available.

Applications (12 copies), stating date of birth, qualifications, and experience, together with 12 copies of 2 testimonials, and the names and addresses of 2 referees, should reach the Secretary, of the Regional Hospital Board, 5, Cotham Lawn-road, Bristol, 6, not later than 7th March, 1952.

BIRMINGHAM REGIONAL HOSPITAL BOARD AND WOLVERHAMPTON COUNTY BOROUGH COUNCIL. Applications invited for joint appointment of Whole-time ASSISTANT CHEST PHYSICIAN (salary £1300–£50–£1750) to the Wolverhampton group and Wolverhampton County Borough Council ; duties at hospitals and clinics in the Wolverhampton area. Successful candidate will devote 9/11ths of time to hospital and clinic work the responsibility of the Board and 2/11ths of time to prevention and aftercare work for the County Borough of Wolverhampton. Appointment subject to National Health Service (Superannuation) Regulations, 1950.

Applications (15 copies), stating name, date of birth, nationality, qualifications, present and previous appointments, and details of 3 referees, to Secretary, Birmingham Regional Hospital Board, 10, Augustus-road, Birmingham, 15, before 10th March, 1952. Candidates may visit hospitals and clinics concerned.

BIRMINGHAM REGIONAL HOSPITAL BOARD. Applications invited for appointment of Part-time CONSULTANT ANÆSTHETIST (9 notional half-days weekly), Shrewsbury group ; duties mainly at Royal Salop Infirmary (241 Beds). Candidates should possess D.A. and have had wide experience in specialty. Appointment subject to National Health Service superannuation regulations.

Applications (15 copies), stating name, age, nationality, qualifications, present and previous appointments, and details of 3 referees, to Secretary, 10, Augustus-road, Birmingham, 15, before 10th March. Candidates may visit group hospitals.

EAST ANGLIAN REGIONAL HOSPITAL BOARD. ASSISTANT RADIOTHERAPIST (whole-time) at the East Suffolk and Ipswich Hospital. Candidates must have a wide experience in the specialty and possess the D.M.R.(T). Salary scale £1300–£1750.

Applications (8 copies), stating age, qualifications, and details of present and previous appointments, together with the names of 3 referees, should reach the undersigned not later than 3rd March, 1952. Applicants are invited to visit the Hospital by direct arrangement with the Hospital Management Committee Secretary at the Hospital.

K. V. F. MORTON, Secretary.

117, Chesterton-road, Cambridge.

LEEDS REGIONAL HOSPITAL BOARD invite applica-tions for the whole-time appointment of CONSULTANT PSYCHIATRIST for duties mainly at Scalebor Park Hospital (289 Beds), near Ilkley. The successful candidate will be given clinical charge of beds and may be required to undertake extra-mural clinical duties within the Bingley, Keighley, Skipton, and Settle Hospital Management Committee area or at Leeds. The Hospital, which has private amenity and free beds, has a high admission-rate. All modern forms of treatment are undertaken.

Applications, stating age, qualifications, and details of present and previous appointments with dates, together with the names of 3 referees, should be forwarded to the Secretary, Park-parade, Harrogate, not later than 15th March, 1952.

LIVERPOOL REGIONAL HOSPITAL BOARD. Alder HEY CHILDREN'S HOSPITAL. Applications are invited for the post of CONSULTANT PÆDIATRIC SURGEON on maximum part-time sessions who will work with the Senior Consultant Surgeons at the above Hospital. Applicants must possess the F.R.C.S. and have had wide experience in children's surgery. Special experience in surgery of newborn infants would be an advantage.

Forms of application from, and to be returned to, Dr. T. Lloyd Hughes, Senior Administrative Medical Officer, Liverpool Regional Hospital Board, 19, James-street, Liverpool, 2, to be received not later than 7th March, 1952.

VINCENT COLLINGE, Secretary to the Board.

NORTH GLOUCESTERSHIRE CLINICAL AREA. SOUTH-WESTERN REGIONAL HOSPITAL BOARD. Applications are invited from registered medical practitioners for the appointment of ASSISTANT CHEST PHYSICIAN (whole-time) in the Senior Hospital Medical Officer grade to the North Gloucestershire Clinical Area. Applicants should possess high medical qualifications, and previous experience in diseases of the chest is essential. The successful candidate will be required for duty mainly at Salterley Grange Sanatorium, near Cheltenham (78 Beds), where he will be required to reside. A furnished flat suitable for a married man is provided. Duties may include visits to other hospitals and sanatoria in the area as may be determined by the Regional Board from time to time. The successful candidate, who will work under the supervision of the Senior Consultant Chest Physician in the Area, will be given some chest clinic duties partly in the Birmingham region. The successful candidate will also be required to collaborate with the Medical Officers of Health of the Local Health Authorities concerned in connection with the Tuberculosis Service. Opportunities will be given for experience in mass radiography.

Applications (15 copies), stating date of birth, qualifications, and experience, together with 15 copies of 2 testimonials, and the names and addresses of 2 referees, should be sent to the Secretary of the Regional Hospital Board, 5, Cotham Lawn-road, Bristol, 6, not later than 7th March, 1952.

NORTH GLOUCESTERSHIRE CLINICAL AREA. SOUTH-WESTERN REGIONAL HOSPITAL BOARD. Appointment of DEPUTY MEDICAL SUPERINTENDENT to Horton Road and Coney Hill Hospitals, Gloucester. Applications are invited from registered medical practitioners for the whole-time appointment of Consultant Psychiatrist in the North Gloucestershire Clinical Area which comprises Gloucester, Cheltenham, Stroud, Forest of Dean and adjoining districts. Applicants should have had wide experience in psychiatry, and must possess the Diploma in Psychological Medicine. Experience in child guidance would be an advantage. The successful applicant will have charge of beds at Horton Road and Coney Hill Hospitals, Gloucester, and will act as Deputy Medical Superintendent of these hospitals : in addition, he will be required to visit other hospitals in the Clinical Area as may be determined by the Regional Board from time to time.

Applications (12 copies), stating date of birth, qualifications, and experience, together with 12 copies of 2 testimonials, and the names and addresses of 2 referees, should be sent to the Secretary of the Regional Hospital Board, 5, Cotham Lawn-road, Bristol, 6, not later than 7th March, 1952.

NORTH WEST METROPOLITAN REGIONAL HOS-PITAL BOARD. Whole-time ASSISTANT PHYSICIAN required at Bedford Chest Clinic, Bedford General Hospital, North Wing, 2, Kimbolton-road, Bedford, duties will include the care of inpatients. Salary £1300–£1750.

Applications, giving date of birth, and names of 3 referees, to Secretary, North West Metropolitan Regional Hospital Board, 11A, Portland-place, W.1, by 15th March, 1952. Clinic may be visited by direct appointment.

NEWCASTLE REGIONAL HOSPITAL BOARD. Tees-side Hospital Management Committee Group. CONSULTANT PATHOLOGIST (Assistant), whole-time, required for the above area. The main laboratory is at Middlesbrough General Hospital. Salary scale £1700–£2750. The person appointed will be required to reside in Middlesbrough. Canvassing will disqualify but candidates are invited to see the laboratories by arrangement with the Consultant Pathologist, General Hospital, Middlesbrough.

Applications, together with names and addresses of 1–3 referees and/or 1–3 testimonials, to be addressed to the Senior Administrative Medical Officer, "Blythswood South," Osborne-road, Newcastle upon Tyne, 2, within 28 days.

MANCHESTER REGIONAL HOSPITAL BOARD invite applications for the vacant whole-time, non-resident post of ASSISTANT PATHOLOGIST to the Rochdale and District Hospital Centre. Candidates should have had previous experience in all branches of hospital pathology. Salary £1300–£50–£1750.

Forms of application may be obtained from the Senior Administrative Medical Officer, Manchester Regional Hospital Board, Cheetwood-road, Manchester, 8, and should be returned, with the names and addresses of 3 referees, to be received not later than 10th March, 1952.

MANCHESTER REGIONAL HOSPITAL BOARD invite applications for the whole-time, non-resident post of CONSULTANT GROUP PATHOLOGIST to the Rochdale and District Hospital Centre (laboratories at Birch Hill Hospital, Rochdale, and Rochdale Infirmary). The post is now vacant. Candidates must be of high professional standing, with good training and experience in all branches of hospital pathology.

Forms of application may be obtained from the Senior Administrative Medical Officer, Manchester Regional Hospital Board, Cheetwood-road, Manchester, 8, and should be returned, with the names and addresses of 3 referees, to be received not later than 10th March, 1952.

MANCHESTER REGIONAL HOSPITAL BOARD invite applications for the whole-time post of CONSULTANT OBSTETRICIAN AND GYNÆCOLOGIST (Assistant) at Preston Royal Infirmary, Sharoe Green Hospital, Preston, and the Chorley Hospitals. The person appointed will also undertake Consultant antenatal and postnatal clinics at Bamber Bridge, Kirkham, and Chorley. Candidates must be of high professional standing and possess higher qualifications. The successful candidate will be required to live within reasonable distance of Preston or Chorley.

Forms of application may be obtained from the Senior Administrative Medical Officer, Manchester Regional Hospital Board, Cheetwood-road, Manchester, 8, and should be returned, with the names and addresses of 3 referees, to be received not later than 12th March, 1952.

SHEFFIELD REGIONAL HOSPITAL BOARD. Applications are invited from registered medical practitioners, preferably holding a higher qualification in psychiatry, for the whole-time post of ASSISTANT PSYCHIATRIST to be attached to the Carlton Hayes Hospital, Narborough, Leicestershire. A house is available on the hospital estate. Salary scale £1300–£50–£1750 p.a.

Application forms and further details may be obtained from the Senior Administrative Medical Officer, Sheffield Regional Hospital Board, Fulwood House, Old Fulwood-road, Sheffield, 10. Completed forms must be returned to the Secretary not later than 8th March, 1952.

SHEFFIELD REGIONAL HOSPITAL BOARD. Applications are invited from registered medical practitioners with a higher qualification in psychiatry for the post of CONSULTANT PSYCHOTHERAPIST who may be either on a whole-time or part-time basis, with a minimum of 8 notional half-days per week, attached to Mapperley Hospital, Nottingham, and its Outpatients' Departments. Analytical training and experience are essential. The post is non-resident.

Application forms and further details may be obtained from the Senior Administrative Medical Officer, Sheffield Regional Hospital Board, Fulwood House, Old Fulwood-road, Sheffield, 10. Completed forms must be returned to the Secretary not later than 8th March, 1952.

SHEFFIELD REGIONAL HOSPITAL BOARD. Applications are invited from registered medical practitioners who are in possession of the D.A., for the whole-time post of ASSISTANT ANÆSTHETIST for hospitals in the Mansfield area. The hospitals concerned would be Mansfield and District General Hospital; the Victoria Hospital, Mansfield; Kings Mill Hospital, Mansfield; and Harlow Wood Orthopædic Hospital, near Mansfield. The person appointed will be required to reside within 10 miles of Mansfield. Salary scale £1300–£50–£1750 p.a.

Application forms and further details may be obtained from the Senior Administrative Medical Officer, Sheffield Regional Hospital Board, Fulwood House, Old Fulwood-road, Sheffield, 10. Completed forms must be returned to the Secretary not later than 8th March, 1952.

SOUTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD. Applications are invited for the appointment of a Whole-time ASSISTANT CHEST PHYSICIAN to the Kingston and Mortlake areas. Salary scale £1300–£50–£1750 p.a. Applicants should have wide experience in tuberculosis and allied chest diseases. The candidate appointed will be required to work under the direction of the Consultant Chest Physician at Kingston.

Applications (5 copies), stating date of birth, qualifications, experience, and present appointment(s), and giving the names of 3 referees, should be made by letter and sent to the Secretary (S.D.1.), South West Metropolitan Regional Hospital Board, 11A, Portland-place, London, W.1, to arrive not later than 15th March, 1952. Applicants may visit the Kingston and Mortlake Clinics by arrangement with the Consultant Chest Physician at Kingston Chest Clinic, 27, Queens-road, Kingston upon Thames (Telephone: Kingston 4658).

SOUTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD. Applications are invited for the appointment of a Whole-time ASSISTANT PATHOLOGIST (Senior Hospital Medical Officer grade) to work under the Group Pathologist in the Epsom (Surrey) group of hospitals. Candidates should be experienced in all branches of clinical pathology.

Applications (5 copies), stating date of birth, qualifications, experience, and present appointment(s), and giving the names and addresses of 3 referees, should be made by letter and sent to the Secretary (S.D.1.), South West Metropolitan Regional Hospital Board, 11A, Portland-place, London, W.1, to arrive not later than 15th March, 1952. Applicants may visit the hospitals by local arrangement.

SOUTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD. Applications are invited for the appointment of a Whole-time CONSULTANT PHYSICIAN to the Croydon group of hospitals. Duties will be mainly at Mayday Hospital, Thornton Heath, Surrey.

Applications (5 copies), stating date of birth, qualifications, experience, and present appointment(s), and giving the names and addresses of 3 referees, should be made by letter and sent to the Secretary (S.D.1.), South West Metropolitan Regional Hospital Board, 11A, Portland-place, London, W.1, to arrive not later than 15th March, 1952. Applicants may visit the hospitals by local arrangement.

SOUTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD. Applications are invited for the appointment of a Whole-time CONSULTANT ANÆSTHETIST at the Plastic and Jaw Injury Unit, Rooksdown House, Basingstoke, Hants.

Applications (5 copies), stating date of birth, qualifications, experience, and present appointment(s), and giving the names and addresses of 3 referees, should be made by letter and sent to the Secretary (S.D.1.), South West Metropolitan Regional Hospital Board, 11A, Portland-place, London, W.1, to arrive not later than 15th March, 1952. Applicants may visit the Hospital by local arrangement.

SOUTH EAST METROPOLITAN REGIONAL HOSPITAL BOARD. Applications are invited for an appointment as CONSULTANT ORTHOPÆDIC SURGEON to the Isle of Thanet group of hospitals. Choice of whole-time employment or the maximum number of part-time sessions will be offered. The duties will be mainly at the Royal Sea-Bathing Hospital, Margate, with clinical charge of both tubercular and other orthopædic cases, together with some administrative duties in assisting the Medical Superintendent. In addition, other beds for acute trauma in the general hospitals of the group will be allotted to the successful candidate. Candidates must have had wide general orthopædic practice with particular experience in long-stay conditions. The possession of a Fellowship of a Royal College of Surgeons or a Mastership in Surgery is essential. Applicants may visit the hospitals concerned.

Apply, stating nationality, age, sex, qualifications, and experience, including details of present appointment and of war service, together with the names and addresses of 3 referees, to the Secretary, Advisory Appointments Committee, South East Metropolitan Regional Hospital Board, 11, Portland-place, London, W.1. The last day for acceptance of applications will be 29th February, 1952.

WELSH REGIONAL HOSPITAL BOARD. Denbighshire and Flintshire Area. Applications are invited for the posts of 2 Whole-time ASSISTANT CHEST PHYSICIANS (Senior Hospital Medical Officers). Salary scale £1300–£1750 p.a. Candidates should have good general medical experience and special experience in tuberculosis and chest diseases. The successful applicants will be based at the Chest Clinic, Wrexham, and will work under the general supervision of the Consultant Chest Physician in charge. Duties will include care of patients at Meadowslea Hospital (75 Beds) in addition to routine clinic and area work. There are facilities for the investigation of patients in general hospitals, and the appointed candidates will be expected to assist in postgraduate teaching as required.

Applications (14 copies), stating date of birth, giving a summary of qualifications, experience, previous appointments with dates, and publications, with names of 3 referees, should be addressed to the Senior Administrative Medical Officer, Welsh Regional Hospital Board, Cathays Park, Cardiff, within 21 days of appearance of this advertisement.

WELSH REGIONAL HOSPITAL BOARD. Applications are invited for the appointment of a CONSULTANT OBSTETRICIAN AND GYNÆCOLOGIST to serve the Clwyd and Deeside Hospital Management Committee Area. He will have charge of beds at St. Asaph's Hospital and will be responsible for visits to other hospitals in the Group. Candidates should be Members of the Royal College of Obstetricians and Gynæcologists and preferably Fellows of a Royal College of Surgeons. Candidates are asked to state whether they wish to be considered for a whole-time or maximum part-time appointment.

Applications (12 copies), stating date of birth, giving a summary of qualifications, experience, previous appointments with dates, and publications, with names of 3 referees, should be addressed to the Senior Administrative Medical Officer, Welsh Regional Hospital Board, Cathays Park, Cardiff, within 21 days of appearance of this advertisement.

WELSH REGIONAL HOSPITAL BOARD. Applications are invited from registered medical practitioners for the appointment of a Whole-time ASSISTANT PATHOLOGIST (Senior Hospital Medical Officer scale) to serve the West Wales Hospital Management Committee. The successful candidate will work at Haverfordwest under the direction of the Consultant in charge. Candidates should have had wide experience in the subject. Possession of a higher qualification will be an advantage.

Applications (12 copies), stating date of birth, giving a summary of qualifications, experience, previous appointments with dates, and publications, with names of 3 referees, should be addressed to the Senior Administrative Medical Officer, Welsh Regional Hospital Board, Cathays Park, Cardiff, within 21 days of appearance of this advertisement.

NORTHERN IRELAND TUBERCULOSIS AUTHORITY. Applications are invited from registered medical practitioners for the whole-time post of CHEST PHYSICIAN (Senior Hospital Medical Officer grade) to undertake Hospital and Clinic duties in No. 2 Area (County Armagh and part of County Down). Applicants must have had wide experience in the diagnosis and treatment of tuberculosis. Possession of a higher medical qualification is desirable. The person appointed will work under the direction of the Consultant to the Area.

Forms of application and conditions of appointment may be obtained from the Secretary, Northern Ireland Tuberculosis Authority, 27, Adelaide-street, Belfast, with whom completed applications should be lodged not later than 22nd February, 1952.

DUBLIN. THE ROYAL CITY OF DUBLIN HOSPITAL, Upper Baggot-street, DUBLIN. Appointment of VISITING PHYSICIAN. A vacancy having occurred on the Visiting Staff caused by the death of Dr. A. R. Parsons, F.R.C.P.I., the Medical Board invite applications, with qualifications and testimonials, to be made not later than Monday, 10th March, 1952, addressed: Honorary Secretary, Medical Board.

Hospital Services: Junior Appointments

(See Note under Appointments, p. 374 of Text.)

CONNAUGHT HOSPITAL, Walthamstow, E.17. (118 Beds.) SURGICAL HOUSE OFFICER required for 6 months (including Special Departments), post vacant 27th February, 1952. Recognised for F.R.C.S.

Applications, with full details and copy testimonials, should be sent immediately to the Secretary, Hospital Management Committee, Forest Group, Langthorne-road, E.11.

DREADNOUGHT SEAMEN'S HOSPITAL, Greenwich, S.E.10. (General Hospital of 142 Beds.) There will be a vacancy for a HOUSE PHYSICIAN on 24th March.

Applications, stating qualifications, age, experience, nationality, and medical school, together with the names of 3 recent referees, should be sent to the undersigned on or before 25th February, 1952. F. A. LYON, Secretary of the Seamen's Hospitals Management Committee.

Dreadnought Hospital, Greenwich, S.E.10.

GERMAN HOSPITAL, Dalston, London, E.8. Applications are invited for the post of HOUSE SURGEON (first, second, or third post) at the above Hospital, and should be sent to the Group Secretary, Hospital Management Committee, Hackney Hospital, London, E.9, within 6 days of the appearance of this advertisement.

GERMAN HOSPITAL, Dalston, E.8. Applications are invited for the post of SENIOR HOUSE OFFICER (Resident Anæsthetist). The successful candidate will also be required to act as Casualty Officer; the appointment is for a period of 1 year in the first instance. Salary £670 p.a., less £130 p.a. for residential amenities.

Applications, with copies of 3 testimonials, should reach the Group Secretary, Hospital Management Committee, Administrative Offices, Hackney Hospital, London, E.9, within 6 days of the appearance of this advertisement, quoting the reference GH/1.

GROVE PARK HOSPITAL, London, S.E.12. Lewisham GROUP HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the resident post of SENIOR HOUSE OFFICER to the Department of Thoracic Surgery (52 Beds) at the above Hospital, which has 401 Beds for the treatment of pulmonary tuberculosis. The appointment is vacant immediately and tenable for 1 year. Salary £670, less £150 for residential emoluments.

Applications, stating age, qualifications, and experience, with copies of 3 recent testimonials or names of referees, should be sent to the Secretary, Group Offices, Lewisham Hospital, London, S.E.13.

HAMPSTEAD GENERAL HOSPITAL, The Green, Hampstead, N.W.3. Applications are invited from registered medical practitioners (Male and Female) for the res dent post of HOUSE SURGEON, for a period of 6 months from 1st April, 1952. Salary in accordance with new national scale.

Applications on the prescribed form, with copies of 3 recent testimonials, to be returned by 10th March, 1952, to the Administrative Officer.

HOSPITAL OF ST. JOHN AND ST. ELIZABETH, 60, Grove End-road, N.W.8. Applications are invited from registered medical practitioners (Male) for the appointment of HOUSE SURGEON, to become vacant on Monday, 3rd March, 1952. Appointment will be for a period of 6 months. Salary is at the rate of £350 p.a.

Applications should reach the Secretary on or before Tuesday, 26th February, 1952, together with copies of 3 recent testimonials.

HOSPITAL OF ST. JOHN AND ST. ELIZABETH, 60, Grove End-road, N.W.8. Applications are invited from registered medical practitioners (Male) for the appointment of HOUSE SURGEON to the Midwifery and Gynæcology Departments and to be responsible for the Casualty Department, to become vacant on Monday, 31st March, 1952. Appointment will be for a period of 6 months. Salary is at the rate of £350 p.a.

Applications should reach the Secretary on or before Tuesday, 4th March, 1952, together with copies of 3 recent testimonials.

HACKNEY HOSPITAL, E.9. (783 Beds.) Applications are invited for the appointment of SENIOR HOUSE OFFICER for Casualty Officer duties. Post tenable for 12 months. Salary is at the rate of £670 p.a., less £130 p.a. for residential emoluments.

Applications, together with copies of 3 testimonials, should be sent to the Secretary, Hackney Group Hospital Management Committee, Hackney Hospital, E.9, by not later than 25th February, 1952.

HAMMERSMITH HOSPITAL AND POSTGRADUATE MEDICAL SCHOOL, London, W.12. 2 HOUSE SURGEONS required 1st April and 1st May for Radiotherapy Wards.

Applications, stating age, qualifications, medical school, experience, copies of testimonials, to Secretary, Board of Governors, by 1st March.

HIGHLANDS HOSPITAL, Winchmore-hill, London, N.21. HOUSE SURGEON required, now vacant. 6 months appointment.

Application forms obtainable from Secretary, Northern Group Hospital Management Committee, Royal Northern Hospital, London, N.7.

KING EDWARD MEMORIAL HOSPITAL, Ealing. SOUTH WEST MIDDLESEX HOSPITAL MANAGEMENT COMMITTEE. HOUSE OFFICER (first, second, or third post) to Casualty, Orthopædic, and Fracture Departments, vacant now.

Applications, stating age, nationality, qualifications with dates, and details of experience, together with copies of 2 recent testimonials, to the Secretary of the Committee, West Middlesex Hospital, Isleworth, Middlesex. Closing date 26th February, 1952.

LAMBETH HOSPITAL, Brook-drive, S.E.11. Resident SENIOR HOUSE OFFICER required for the Radiotherapy Department of the above Hospital. 60 Beds are allotted to this department. Facilities would be granted to the successful candidate to attend the necessary lectures for the Diploma of Radiotherapy.

For form of application, apply to the Secretary, Lambeth Group Hospital Management Committee, Renfrew-road, S.E.11.

LAMBETH HOSPITAL, Brook-drive, S.E.11. South West METROPOLITAN REGIONAL HOSPITAL BOARD. Applications are invited for the post of SENIOR REGISTRAR in the X-ray Diagnostic Department of the Lambeth Hospital. D.M.R. essential. The Hospital is recognised as a training school for Radiographers. Canvassing will disqualify, but candidates are not precluded from visiting the Hospital (by arrangement) if they so desire.

For form of application apply (enclosing stamped addressed envelope) to the Secretary, Lambeth Group Hospital Management Committee, Renfrew-road, S.E.11, to whom the completed applications should be returned not later than 1st March, 1952.

LEWISHAM GENERAL HOSPITAL, London, S.E.13. LEWISHAM GROUP HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the appointment of SENIOR HOUSE OFFICER to the Orthopædic and Traumatic Department. The medical staff of the department comprises 2 Registrars in addition to this vacancy, under the direction of 2 Consultants. There is a separate establishment of Casualty Officers. This post may be either resident or non-resident. It is vacant immediately and tenable for 1 year. Salary £670 p.a., subject to an appropriate deduction if resident.

Applications, stating age, qualifications, and experience with names of 3 referees, should be sent to the Secretary, Group Offices, Lewisham Hospital, London, S.E.13.

LONDON CHEST HOSPITAL. Hospitals for Diseases OF THE CHEST. A vacancy occurs 1st April, 1952, for Part-time REGISTRAR (Registrar grade), E.N.T. Department, to attend 2 half-days a week in London and 1 attendance fortnightly at Country Branch (near Letchworth). The appointment is for 1 year with the prospect of renewal.

Applications, stating date of birth, qualifications with dates, and previous appointments held, with copies of 3 testimonials, should reach the undersigned by 20th February, 1952.

THOMAS BROWN, House Governor.

London Chest Hospital, E.2.

LONDON JEWISH HOSPITAL, Stepney Green, E.1. CLINICAL ASSISTANT (Outpatient's Skin Department) for 1 notional half-day a week. Thursday 9.30 A.M. Salary £175 p.a.

Applications, &c., with 3 recent testimonials, to the Secretary, Stepney Group Hospital Management Committee, Raine-street, London, E.1.

LONDON HOSPITAL, Whitechapel, E.1. Applications are invited for the post of SENIOR HOUSE OFFICER to the Department of Physical Medicine, vacant on 1st April, 1952. The appointment will be for 6 months in the first instance at a salary of £670 p.a.

Applications (6 copies), giving full particulars, should be addressed to the House Governor to arrive not later than 10th March, 1952. H. BRIERLEY, House Governor.

METROPOLITAN HOSPITAL, Kingsland-road, London, E.8. (General—147 Beds.) CENTRAL GROUP HOSPITAL MANAGEMENT COMMITTEE. Applications are invited from registered medical practitioners for the post of HOUSE SURGEON. The appointment is for 6 months only and the salary, depending upon the number of previous posts held, £350, £400, or £450 p.a., less residential charges of £100 p.a.

Applications, stating age, nationality, qualifications, and experience, together with copies of 2 recent testimonials, should reach the Assistant Secretary of the Hospital by 23rd February, 1952.

MILLER GENERAL HOSPITAL, S.E.10. (180 Beds— recognised by Royal College of Physicians.) Applications are invited for the post of HOUSE PHYSICIAN. 6 months from early March. National salary and conditions.

Full particulars, and copies of testimonials, to Secretary, Greenwich and Deptford Hospital Management Committee, St. Alfege's Hospital, Greenwich, S.E.10.

NORTH MIDDLESEX HOSPITAL, Edmonton, N.18. HOUSE SURGEONS (resident):—

(*a*) General and genito-urinary surgery (2 posts).
(*b*) General and thoracic.
(*c*) E.N.T. and eyes.

All vacant 1st April, 1952. 6 months appointment.

Applications, stating age, qualifications, experience, nationality, with copies of recent testimonials, to Secretary, by 23rd February.

NELSON HOSPITAL, Kingston-road, Merton Park, S.W.20. Applications invited for appointment of RESIDENT HOUSE SURGEON, vacant now.

Applications, stating age, qualifications, and experience, with a copy of 2 testimonials and the name of 1 referee, should be sent to the Group Secretary, St. Helier Group Hospital Management Committee, St. Helier Hospital, Carshalton, Surrey.

NORTH EAST METROPOLITAN REGIONAL HOSPITAL BOARD. Applications are invited for the following positions :—

(i) ANÆSTHETIC REGISTRAR (non-resident), Whipps Cross Hospital, Whipps Cross-road, E.11. To reside within reasonable distance of the Hospital.

(ii) SURGICAL REGISTRAR (non-resident), Whipps Cross Hospital, Whipps Cross-road, E.11. To reside within reasonable distance of the Hospital.

(iii) MEDICAL REGISTRAR (non-resident), Whipps Cross Hospital, Whipps Cross-road, E.11. To reside within reasonable distance of the Hospital.

(iv) MEDICAL REGISTRAR (resident or non-resident), St. Clement's Hospital, 2A, Bow-road, E.3.

(v) MEDICAL REGISTRAR (resident or non-resident), Oldchurch Hospital, Romford. Necessary to sleep in on duty nights. The Hospital has a total of 718 Beds with specialised units for neurology, cardiology, neurosurgery, &c. There are over 100 Beds in the medical unit and the post provides excellent training.

(vi) E.N.T. REGISTRAR (non-resident), Whipps Cross Hospital, Whipps Cross-road, E.11.

(vii) Part-time E.N.T. REGISTRAR (non-resident), The Queen Elizabeth Hospital for Children, Hackney-road, E.2 (5 sessions a week). Experience in treatment of children desirable.

(viii) REGISTRAR (non-resident) in Pathology Group Laboratory, Mile End Hospital, Bancroft-road, E.1. Candidates should have good general experience in pathology, particularly morbid anatomy and hæmatology.

Appointments are subject to review after 1 year. A local charge will be made for any residential amenities provided.

Separate applications in duplicate, stating date of birth, full details of qualifications, and experience, present appointment, grade, and salary, together with 2 copies of 2 recent testimonials, should reach C. E. NICOL, Secretary, 11A, Portland-place, W.1, by Saturday, 1st March, 1952.

PADDINGTON GREEN CHILDREN'S HOSPITAL, W.2. (ST. MARY'S HOSPITAL.) Applications are invited for the post of CASUALTY OFFICER (second or third post). The appointment is non-resident and tenable for 6 months as from 1st April, 1952.

Applications, stating age, nationality, qualifications with dates, and experience, together with copies of recent testimonials, should reach the undersigned not later than 23rd February, 1952. E. W. STOCKWELL, Secretary-Superintendent.

PADDINGTON GREEN CHILDREN'S HOSPITAL, W.2. (ST. MARY'S HOSPITAL). Applications are invited for the post of HOUSE PHYSICIAN (second or third post), post vacant 1st May, 1952, and tenable for 6 months.

Applications, stating age, nationality, qualifications with dates, together with copies of recent testimonials, should reach the undersigned not later than 23rd February, 1952.

E. W. STOCKWELL, Secretary-Superintendent.

PADDINGTON GROUP HOSPITAL MANAGEMENT COMMITTEE. PADDINGTON HOSPITAL, Harrow-road, W.9. Applications are invited for the posts of HOUSE SURGEON (general duties) from 1st March, 1952, as follows :—

St. Charles' Hospital, Ladbroke-grove, W.10 (579 Beds), 2 vacancies.

National Temperance Hospital, Hampstead-road, N.W.1 (138 Beds), 1 vacancy.

Salary and conditions of service for hospital medical and dental staffs.

Applications, stating age, qualifications, experience, together with the names and addresses of 2 referees, to reach the Secretary to the Committee immediately.

QUEEN ELIZABETH HOSPITAL FOR CHILDREN MANAGEMENT COMMITTEE, Hackney-road, E.2, Shadwell, E.1, and BANSTEAD WOOD, SURREY. HOUSE OFFICER. The appointment will be made for 2 periods of 6 months each. First period House Physician, to commence 1st April, followed by leave and second period House Surgeon and Casualty Officer from 1st November, 1952.

Application forms may be obtained from the Secretary at Hackney-road and should be returned with copies of not more than 3 testimonials, on or before 23rd February, 1952.

ROYAL NATIONAL ORTHOPÆDIC HOSPITAL, Brockley-hill, STANMORE, MIDDLESEX. Applications are invited for the appointment of RESIDENT SENIOR HOUSE OFFICER for a period of 6 months, duties to commence 22nd April.

Applications, with copies of 3 testimonials, to be addressed to the House Governor, at 234, Great Portland-street, London, W.1, by the 3rd March.

ROYAL NATIONAL ORTHOPÆDIC HOSPITAL, 234, Great Portland-street, London, W.1. Applications are invited for the appointment of RESIDENT SENIOR HOUSE OFFICER for period of 6 months, duties to commence 15th April.

Applications, with copies of 3 testimonials, to be addressed to the House Governor by 3rd March.

ROYAL NATIONAL ORTHOPÆDIC HOSPITAL, 234, Great Portland-street, London, W.1. Applications are invited for the appointment of CLINICAL ASSISTANT (whole-time). The post is graded as Senior House Officer status and will include assisting in outpatient and inpatient work. Appointment to commence 1st May. Post is tenable for 1 year.

Applications, together with copies of 3 testimonials, to be addressed to the House Governor by 3rd March.

ROYAL FREE HOSPITAL, Gray's Inn-road, W.C.1. Applications are invited from Men and Women practitioners for the appointment of RESIDENT ASSISTANT PATHOLOGIST at the above Hospital. Salary in accordance with Ministry of Health scale for House Officers. Applicants should have held at least 1 Junior House appointment. The appointment is for 6 months in the first instance, duties commencing on 1st May, 1952.

Application forms may be obtained from the Secretary to the Board of Governors, Royal Free Hospital, Gray's Inn-road, W.C.1, to whom they should be returned not later than 15th March.

REGIONAL NEUROSURGICAL CENTRE. (50 Beds.) BROOK GENERAL HOSPITAL, Shooters Hill-road, S.E.18. SENIOR HOUSE OFFICER (neurosurgery). The post also provides excellent opportunity for training in neurology. Salary £670 p.a., less £150 p.a. for residence.

Apply to Secretary, Memorial Hospital, Woolwich, S.E.18.

ST. CHARLES' HOSPITAL, Ladbroke-grove, W.10. Applications are invited for the post of HOUSE SURGEON for duty from 1st March, 1952, in the Thoracic Department at above Hospital. Previous experience an advantage. Salary and conditions of service for hospital medical and dental staffs.

Applications, stating age, qualifications, experience, together with the names and addresses of 2 referees, to reach the Secretary, Paddington Group Hospital Management Committee, Paddington Hospital, Harrow-road, W.9, immediately.

ST. CHARLES' HOSPITAL, Ladbroke-grove, W.10. PADDINGTON GROUP HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of CASUALTY OFFICER (non-resident), Senior House Officer, at above Hospital. The appointment is tenable for 1 year in the first instance, and candidates will be interviewed on 21st March for duty as from 1st April, 1952.

Applications, stating age, qualifications, experience, together with the names and addresses of 3 referees, should reach the undersigned by 10th March, 1952.

C. R. JOLLY, Secretary,
Paddington Group Hospital Management Committee.
285, Harrow-road, W.9.

ST. CHARLES' HOSPITAL, Ladbroke-grove, W.10. Applications are invited for the post of HOUSE PHYSICIAN for duty from 1st March, 1952, on the T.B. Wards of above Hospital. This post provides good opportunity for studying for a higher degree. Salary and conditions of service for hospital medical and dental staffs.

Applications, stating age, qualifications, experience, together with the names and addresses of 2 referees, to reach the Secretary, Paddington Group Hospital Management Committee, Paddington Hospital, Harrow-road, W.9, immediately.

ST. CHARLES' HOSPITAL, Ladbroke-grove, W.10. Applications are invited for the post of HOUSE SURGEON to the Departments of Plastic, E.N.T., Ophthalmology at above Hospital. Salary and conditions of service for hospital medical and dental staffs.

Applications, stating age, qualifications, experience, together with the names and addresses of 3 referees, to reach the Secretary, Paddington Group Hospital Management Committee, Paddington Hospital, Harrow-road, W.9, immediately.

ST. MARY'S HOSPITAL, W.2. Applications are invited for the post of Whole-time CANCER REGISTRAR to St. Mary's Hospital, graded Registrar. The successful candidate will be responsible for the compiling of Cancer Records, and will be expected to undertake certain clinical duties at a Constituent Hospital within the St. Mary's group.

Applications, stating nationality, date of birth, permanent address, qualifications with dates, and details of previous and present appointments, together with the names and addresses of 3 referees, should reach the undersigned by 1st March, 1952.

7th February, 1952. ALAN POWDITCH, House Governor.

ST. MARY'S HOSPITAL, W.2. Applications are invited for the post of SENIOR REGISTRAR in Bacteriology (8 notional half-days) at St. Mary's Hospital. The appointment is for a first period of 12 months, and the holder will be eligible for re-election. The successful candidate will be required to devote the remaining 3 notional half-days to research work in the Wright Fleming Institute of Microbiology, for which he will receive a salary so that his total remuneration is equal to that of a whole-time Senior Registrar.

Applications, stating nationality, date of birth, permanent address, qualifications with dates, and details of previous and present appointments, together with the names and addresses of 3 referees, should reach the undersigned by 23rd February, 1952. ALAN POWDITCH, House Governor.

ST. MARY'S HOSPITAL, W.2. Applications are invited for the post of NON-RESIDENT REGISTRAR at the Western Ophthalmic Hospital (43 Beds). Candidates must be registered medical practitioners, with postgraduate experience, and must hold, or be studying for, the F.R.C.S. The appointment is for a first period of 12 months, as from 1st April, 1952, the holder to be eligible for reappointment for 3 further periods of 12 months. The grading for this post is Senior Registrar.

Applications, stating nationality, date of birth, permanent address, qualifications with dates, and details of previous and present appointments, and experience, together with the names and addresses of 3 referees, should reach the undersigned by 27th February, 1952.

ALAN POWDITCH, Secretary to the Board of Governors.

ST. ALFEGE'S HOSPITAL, Greenwich, S.E.10. (506 Beds—recognised by Royal College of Surgeons.) Applications are invited for the post of HOUSE SURGEON, 6 months from approximately early March. National salary and conditions.

Full particulars and copies of testimonials to Secretary, Greenwich and Deptford Hospital Management Committee at the above Hospital.

ST. GEORGE-IN-THE-EAST HOSPITAL, Raine-street, Wapping, E.1. Applications are invited for the post of HOUSE SURGEON (House Officer, first, second, or third). Tenable for 6 months. Salary, &c., in accordance with national scale.

Application forms should be obtained from, and returned immediately to, the Medical Superintendent.

ST. GEORGE-IN-THE-EAST HOSPITAL, Raine-street, Wapping, E.1. Applications are invited for the post of HOUSE PHYSICIAN (House Officer, first, second, or third), post vacant 17th March, 1952. Salary, &c., in accordance with national scale. Tenable for 6 months.

Application forms obtainable from, and returnable to, the Medical Superintendent.

ST. JAMES' HOSPITAL, Ouseley-road, Balham, S.W.12. SENIOR HOUSE OFFICER (Orthopædic and Trauma Unit—90 Beds), resident, post vacant immediately.

Applications, stating age, previous experience, qualifications, and names of 2 referees, to the Secretary, Wandsworth Hospital Group, 14, Atkins-road, Balham, S.W.12, by 25th February, 1952.

WOOLWICH GROUP HOSPITAL MANAGEMENT COMMITTEE. SENIOR HOUSE OFFICER (anæsthetics). The appointment is to the Woolwich group of hospitals and is tenable for 1 year, resident for 6 months at St. Nicholas Hospital, Plumstead, and for 6 months at Memorial Hospital, Woolwich. These hospitals are recognised for the D.A. Salary £670 p.a., less £150 p.a. for board and lodging.

Applications, together with copies of 2 recent testimonials, to be sent to Secretary, Memorial Hospital, Woolwich, S.E.18.

Provincial

For appointment of Medical Registrar, Oldchurch Hospital, Romford, see North East Metropolitan Regional Hospital Board advertisement in London section.

ASHTON, HYDE, AND GLOSSOP HOSPITAL MANAGEMENT COMMITTEE. Applications are invited from registered medical practitioners (Male and Female) for the following House Officer appointment tenable for a period of 6 months :—

District Infirmary, Ashton-under-Lyne (200 Beds)

CASUALTY AND ORTHOPÆDIC HOUSE SURGEON, vacant now. Post recognised for the F.R.C.S. (Eng.). Appointment subject to Ministry of Health terms and conditions of service.

Applications, giving age, nationality, qualifications, and experience, with copies of 3 testimonials, should be forwarded to R. W. McVITY, Secretary.

Astley-road, Stalybridge, Cheshire.

AMERSHAM GENERAL HOSPITAL, Bucks. High WYCOMBE AND DISTRICT HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of OBSTETRIC HOUSE SURGEON in modern Maternity Department which is a Training School for Midwives, post vacant on 1st March, 1952. Tenable for 6 months, and is recognised for the D.Obst.R.C.O.G.

Applications to Secretary, Management Committee, Amersham General Hospital.

AYLESBURY, BUCKS. ROYAL BUCKINGHAMSHIRE HOSPITAL. HOUSE SURGEON to the Department of Children's Surgery and Orthopædics which is centred on this Hospital for the area. There are 35 orthopædic beds and 10 children's beds. First or second post, which carries additional remuneration at the rate of £50 p.a. Vacant now.

Please apply, with 2 testimonials, to the Secretary-Superintendent, as soon as possible.

AYLESBURY, BUCKS. ROYAL BUCKINGHAMSHIRE HOSPITAL. HOUSE SURGEON for E.N.T. and Ophthalmic Department. Recognised for D.L.O. and D.O. First or second post, which carries additional remuneration at the rate of £50 p.a. Vacant now.

Please apply, with 2 testimonials, to the Secretary-Superintendent, as soon as possible.

ALDERLEY EDGE, near MANCHESTER. DAVID LEWIS EPILEPTIC COLONY. A medical Man or Woman is required to assist the Medical Director of this Colony. The post should be combined with reading or research. Salary £475 a year, plus full emoluments.

Please communicate with the Director at the Colony.

ABERYSTWYTH GENERAL HOSPITAL. Mid-Wales HOSPITAL MANAGEMENT COMMITTEE. Applications are invited from registered medical practitioners (Male or Female) for the post of RESIDENT HOUSE SURGEON (first, second, or third post). Salary in accordance with terms and conditions of service in accordance with Ministry of Health.

Applications, giving particulars as to age, qualifications, and experience, together with copies of 3 recent testimonials, should be forwarded to— J. P. THOMAS, Secretary,

Mid-Wales Hospital Management Committee.

Administrative Office, General Hospital, Aberystwyth.

BECKENHAM HOSPITAL, Croydon-road, Beckenham, KENT. CASUALTY OFFICER required immediately for the Casualty Department of this General Hospital of 100 Beds with duties in the Orthopædic and Fracture Departments. Salary £670 a year, less £150 a year for residential services. The appointment is tenable for 1 year in the first instance.

Applications, stating age, qualifications, and experience, together with names and addresses of 3 referees, should be sent to the Administrative Officer.

BECKENHAM MATERNITY HOSPITAL, Stone Park-avenue, BECKENHAM, KENT. Applications are invited, preferably from candidates holding their M.R.C.O.G., for the non-resident post of Temporary SENIOR REGISTRAR in Obstetrics and Gynæcology. The appointment is tenable until 30th June, 1952, in the first instance, at a salary of £1000 p.a.

Applications, stating age, qualifications, and experience, together with names and addresses of 3 referees, should be sent to the Administrative Officer, Beckenham Hospital, Croydon-road, Beckenham, Kent.

BATH. ROYAL NATIONAL HOSPITAL FOR RHEUMATIC DISEASES. Applications are invited from registered medical practitioners for the post of SENIOR HOUSE OFFICER in Rheumatology. Salary, terms, and conditions of service in accordance with those laid down by Ministry of Health. The Hospital is recognised for Part II of the Diploma of Physical Medicine.

Applications, stating age, qualifications, and experience, with 3 recent testimonials, to be forwarded to the undersigned as soon as possible. J. LAWRENCE MEARS, Secretary,

Bath Hospital Management Committee.

Manor Hospital, Bath.

BATLEY. THE GENERAL HOSPITAL, Carlinghow-hill, BATLEY, YORKS. (102 Beds.) Applications are invited for the appointment of HOUSE SURGEON, now vacant. This general hospital will shortly provide all the inpatient treatment for the Group in the specialties of orthopædics, E.N.T., and ophthalmology in addition to some general surgery, together with the usual outpatient clinics.

Applications, stating age, qualifications, and experience, together with recent testimonials, should be submitted immediately to the Secretary, Dewsbury, Batley and Mirfield Hospital Management Committee, 20, Oxford-road, Dewsbury.

BATLEY. THE GENERAL HOSPITAL, Carlinghow-hill, BATLEY. (102 Beds.) DEWSBURY, BATLEY AND MIRFIELD HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of HOUSE OFFICER. This Hospital is a general hospital at present, but will shortly specialise in orthopædic and general surgery, ophthalmology, and otorhinolaryngology.

Applications, giving full details of age, nationality, qualifications, and experience, together with copies of 2 recent testimonials, should be sent immediately to the Secretary, 20, Oxford-road, Dewsbury.

BARNET GENERAL HOSPITAL, Barnet, Herts. Resident SENIOR HOUSE OFFICER (anæsthetics) required for 1 year from 25th February. Post recognised for D.A. examination.

Applications, stating age, qualifications, nationality, experience, and names of 2 referees, to be sent to the Medical Director.

BARNSLEY. ST. HELEN HOSPITAL. House Officer (pædiatrics) Senior House Officer. Salary £670.

Apply to Secretary, Barnsley Hospital Management Committee, 33, Gawber-road, Barnsley.

BARNSLEY. BECKETT HOSPITAL. Sheffield Regional HOSPITAL BOARD. Applications are invited from registered medical practitioners for the resident whole-time post of REGISTRAR (orthopædics) to the above Hospital. Single accommodation is available. The appointment is for 1 year in the first instance and may be renewed for a further year.

Applications, giving age, nationality, qualifications, present and previous appointments with dates, together with names and addresses of 3 referees, should be sent to the Secretary, Sheffield Regional Hospital Board, Fulwood House, Old Fulwood-road, Sheffield, 10, to arrive not later than 25th February, 1952.

BARNSLEY. BECKETT HOSPITAL. Sheffield Regional HOSPITAL BOARD. Applications are invited from registered medical practitioners for the resident whole-time post of SURGICAL REGISTRAR to the above Hospital. Recognised for training for the F.R.C.S. The appointment is for 1 year in the first instance and may be renewed for a further year.

Applications, giving age, nationality, qualifications, present and previous appointments with dates, together with names and addresses of 3 referees, should be sent to the Secretary, Sheffield Regional Hospital Board, Fulwood House, Old Fulwood-road, Sheffield, 10, to arrive not later than 25th February, 1952.

BARNSTAPLE. NORTH DEVON INFIRMARY. (110 Beds.)

SENIOR HOUSE SURGEON required, post vacant now. Salary £670 p.a., less deduction if resident.

HOUSE PHYSICIAN, post vacant 1st April, 1952. Salary £350–£450 p.a., less £100 p.a. board and lodging.

Applications to Secretary and Finance Officer, North Devon Hospital Management Committee, 19, Alexandra-road, Barnstaple, North Devon.

BEDFORD GENERAL HOSPITAL (South Wing). House SURGEONS. These appointments are recognised for F.R.C.S., and offer exceptional opportunities for general experience in a busy, acute surgical unit. Posts are now vacant.

Applications, stating age, nationality, qualifications, previous appointments, together with copies of 2 testimonials, should be addressed to the Secretary, Bedford Group Hospital Management Committee, 3, Kimbolton-road, Bedford.

BEVERLEY, YORKS. WESTWOOD HOSPITAL. Junior HOUSE PHYSICIAN (first or second post) with care of orthopædic beds required immediately. Salary in accordance with Ministry of Health scale.

Applications, stating age, qualifications, and experience, together with copies of 3 references, should be addressed to the Secretary.

BEVERLEY, YORKS. BROADGATE HOSPITAL. (600 Mental Beds.)

SENIOR HOUSE PHYSICIAN. Salary £670 p.a.

HOUSE PHYSICIAN. Salary £350–£450, according to previous posts held.

Applications, stating age, qualifications, and experience, with 2 references, to Secretary, Westwood Hospital, Beverley, Yorks.

BIRMINGHAM. THE CHILDREN'S HOSPITAL, Ladywood-road, BIRMINGHAM, 16. THE UNITED BIRMINGHAM HOSPITALS. HOUSE OFFICER (surgical) required for 6 months, to commence duty on 1st May, 1952. The duties will be mainly general surgery, but the officer will have, in addition, the opportunity of undertaking a certain amount of special surgery.

Forms of application may be obtained from the undersigned and should be returned not later than 29th February, 1952.

N. R. WINWOOD, House Governor.

BIRMINGHAM. THE CHILDREN'S HOSPITAL, Ladywood-road, BIRMINGHAM, 16. THE UNITED BIRMINGHAM HOSPITALS. Applications are invited for the appointment of AURAL REGISTRAR (non-resident), in the grade of Registrar, vacant 1st July, 1952, for 1 year. Preference will be given to candidates who are Fellows of the Royal College of Surgeons and/or hold the Diploma in Child Health.

Forms of application may be obtained from the undersigned and should be returned not later than 8th March, 1952.

N. R. WINWOOD, House Governor.

BIRMINGHAM. THE UNITED BIRMINGHAM HOSPITALS. THE BIRMINGHAM MATERNITY HOSPITAL. HOUSE SURGEON required. Salary £400 or £450 p.a., according to experience. The appointment is for a period of 6 months and is recognised for the D.Obst. R.C.O.G. Duties commence 1st May, 1952.

Application forms can be obtained from the undersigned, and should be returned not later than 1st March, 1952.

H. N. LAMB, House Governor.

The United Birmingham Hospitals, Birmingham and Midland Hospitals for Women, Showell Green-lane, Sparkhill, Birmingham, 11.

BIRMINGHAM, 18. DUDLEY ROAD HOSPITAL. (900 Beds.) THE BIRMINGHAM (DUDLEY ROAD) GROUP OF HOSPITALS. Applications are invited for the post of SENIOR HOUSE OFFICER (anæsthetics), resident, which becomes vacant on 1st April, 1952. The person appointed will be based at Dudley Road Hospital, but duties within the Group may occur. This Hospital is recognised for training for the Diploma in Anæsthetics.

Applications, stating age, nationality, qualifications, and experience, and accompanied by copies of 3 recent testimonials, should be sent within 7 days to The Secretary, Hospital Management Committee, Dudley Road Hospital, Birmingham, 18.

BIRMINGHAM (near). SOLIHULL HOSPITAL, Lode-lane, SOLIHULL. GROUP 25 BIRMINGHAM (SELLY OAK) HOSPITAL MANAGEMENT COMMITTEE. Vacancy immediately for HOUSE SURGEON. This is a general hospital and offers good experience in general and traumatic surgery. There are 5 other Resident Medical Officers.

Applications within 14 days of this advertisement, giving qualifications, experience, and age, with copies of recent testimonials or names of 2 referees, to the Medical Superintendent, Solihull Hospital, Lode-lane, Solihull, near Birmingham.

BIRMINGHAM (near). CANWELL HALL BABIES' HOSPITAL. (60 Beds for babies and children up to the age of 12 years—2 House Physicians.) GROUP 25 BIRMINGHAM (SELLY OAK) HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of HOUSE PHYSICIAN (Male or Female), vacant 1st April, 1952. This post includes attendance at Outpatient Clinics and Neonatal Departments in Birmingham hospitals and a Child Welfare Centre. Recognised for D.C.H.

Applications to the Paediatrician, Sorrento Maternity Hospital, Wake Green-road, Birmingham, 13, not later than 27th February, 1952.

BIRMINGHAM REGIONAL HOSPITAL BOARD. Applications invited for appointment of Whole-time REGISTRAR in Psychiatry, Birmingham (Mental C) group; duties at Highcroft Hall, Erdington (1179 Beds). Accommodation available for single person. Appointment subject to National Health Service superannuation regulations.

Applications (10 copies), stating name, age, nationality, qualifications, present and previous appointments, details of 3 referees, to Secretary, 10, Augustus-road, Birmingham, 15, before 10th March, 1952. Candidates may visit the Hospital.

BIRMINGHAM REGIONAL HOSPITAL BOARD. Applications invited for appointment of Whole-time REGISTRAR in Orthopædics (Resident Surgical Officer) Coventry group; duties at Hospital of St. Cross, Rugby (168 Beds, including 40 orthopædic), resident appointment. Experience in specialty essential; possession of higher qualification an advantage. Appointment subject to National Health Service superannuation regulations.

Applications (10 copies), stating name, age, nationality, qualifications, present and previous appointments, and details of 3 referees, to Secretary, 10, Augustus-road, Birmingham, 15, before 10th March, 1952. Candidates may visit the Hospital.

BIRMINGHAM REGIONAL HOSPITAL BOARD. Applications invited for following whole-time appointments:—

(*a*) SURGICAL REGISTRAR (Resident Surgical Officer) to the Stafford group; duties at Staffordshire General Infirmary, Stafford (159 Beds) and Yarnfield Recovery Unit (32 Beds), vacant 1st May, 1952.

(*b*) SURGICAL REGISTRAR (Resident Surgical Officer) to the Coventry group; duties at Hospital of St. Cross, Rugby (168 Beds, including 45 general surgical), resident appointment.

(*c*) SURGICAL REGISTRAR (Resident Surgical Officer) South Warwickshire group; duties mainly at Warneford Hospital, Leamington Spa (207 Beds), resident appointment.

For each appointment experience in general surgery essential and higher qualification an advantage. Appointments subject to National Health Service superannuation regulations.

Applications (10 copies), stating name, age, nationality, qualifications, present and previous appointments, and details of 3 referees, to Secretary, 10, Augustus-road, Birmingham, 15, before 10th March, 1952. Candidates for more than 1 appointment should forward 7 copies of applications in respect of each vacancy. Candidates may visit the hospitals concerned.

BRADFORD. ST. LUKE'S HOSPITAL.

ORTHOPÆDIC HOUSE SURGEON/CASUALTY OFFICER, vacant now. Salary £350–£450 p.a., less £100 p.a. residential emoluments.

SENIOR ORTHOPÆDIC HOUSE SURGEON/CASUALTY OFFICER, vacant now. Salary £670 p.a., less £130 p.a. residential emoluments.

Applications for above posts, stating age, nationality, qualifications, and experience, with copy testimonials, to Secretary, Bradford Royal Infirmary.

BRADFORD. ST. LUKE'S HOSPITAL. House Surgeon, vacant 1st March, 1952. Salary £350–£450, less £100 p.a. residential emoluments.

Applications, stating age, nationality, qualifications, and experience, with copy testimonials, to Secretary, Bradford Royal Infirmary.

BRADFORD ROYAL INFIRMARY.

HOUSE SURGEON (general), vacant 1st March, 1952.

ORTHOPÆDIC HOUSE SURGEON/CASUALTY OFFICER, vacant now.

Salary for above appointments £350–£450 p.a., less £100 p.a. for residential emoluments.

SENIOR ORTHOPÆDIC HOUSE SURGEON CASUALTY OFFICER, vacant now. Salary £670 p.a., less £130 p.a. residential emoluments.

Applications, stating age, nationality, qualifications, and experience, with copy testimonials, to Secretary.

BRADFORD ROYAL INFIRMARY. House Surgeon (Thoracic Unit), vacant 1st April. Salary £350–£450, less £100 p.a. residential emoluments.

Applications, stating age, nationality, qualifications, and experience, with copy testimonials, to Secretary.

BRADFORD. ROYAL EYE AND EAR HOSPITAL. HOUSE SURGEON (ophthalmic), vacant 3rd April. Hospital recognised for F.R.C.S. and D.O.M.S. examination. Salary £350–£450, less £100 p.a. residential emoluments.

Applications, stating age, nationality, qualifications, and experience, with copy testimonials, to Secretary, Bradford Royal Infirmary.

BRADFORD CHILDREN'S HOSPITAL. (102 Beds.) HOUSE OFFICER (Female), vacant 1st April. Salary £350–£450, less £100 p.a. residential emoluments. Hospital recognised for D.C.H.

Applications, stating age, nationality, qualifications, and experience, to Secretary, Bradford Royal Infirmary.

BRIGHTON, 7. ROYAL SUSSEX COUNTY HOSPITAL. (300 Beds.) Applications are invited for the post of ORTHOPÆDIC HOUSE SURGEON, at the above Hospital, vacant now.

Applications, with full details of age, experience, &c., together with copies of 3 recent testimonials to be sent to the Administrative Officer within 7 days of the appearance of this advertisement.

BRIGHTON, 7. ROYAL SUSSEX COUNTY HOSPITAL. (300 Beds.) Applications are invited for the post of HOUSE SURGEON at the above Hospital, now vacant. Recognised for the F.R.C.S.

Applications, with full details of age, experience, &c., together with the names and addresses of 2 referees, should be sent to the Administrative Officer of the Hospital within 7 days of the appearance of this advertisement.

BRAINTREE, ESSEX BLACK NOTLEY HOSPITAL. Applications are invited for the post of HOUSE PHYSICIAN (first, second, or third post) in the medical and pediatric wards of the above Hospital. Tenable for 6 months. Salary in accordance with terms of service issued by the Ministry of Health, plus £50 p.a.

Applications, with copies of 3 recent testimonials, should be forwarded to the Secretary, Colchester Group Hospital Management Committee, 14, Pope's-lane, Colchester.

BISHOP'S STORTFORD, HERTS. HAYMEADS HOSPITAL. (300 occupied beds. Midway between London and Cambridge. Main Line Railway from Liverpool Street.) Applications are invited from registered medical practitioners for the resident appointment of SENIOR HOUSE OFFICER (surgical). Salary £670 p.a., less £130 p.a. in respect of residential emoluments. The appointment is due to commence as soon as possible, for a period of 1 year.

Applications, stating nationality, age, qualifications, and experience, with copies of recent testimonials, or the names of referees, should be sent to the Secretary, Hertford Group Hospital Management Committee, Hertford County Hospital, Hertford, Herts.

BISHOP'S STORTFORD, HERTS. HAYMEADS HOSPITAL. (350 occupied beds. Midway between London and Cambridge. Main Line Railway from Liverpool Street.) Applications are invited from registered medical practitioners for the appointment of a temporary Whole-time REGISTRAR (medical) at the above Hospital, which includes duties in connection with an active T.B. Unit. Salary at the rate of £775–£890 p.a., less £130 p.a., for residential emoluments. Appointment for a period up to 1 year.

Applications, stating age, nationality, qualifications, and experience, with copies of recent testimonials or the names of referees, should be sent to the Administrative Officer.

BISHOP'S STORTFORD AND DISTRICT HOSPITAL, Rye-street, BISHOP'S STORTFORD, HERTS. (67 Beds—Medical, Surgical, and Maternity. Midway between London and Cambridge. Main Line Railway from Liverpool Street.) Applications are invited from registered medical practitioners for a RESIDENT HOUSE OFFICER (first or second post held). Salary £350–£400 p.a., less £100 p.a., for residential emoluments. Appointment to commence 1st March, 1952.

Applications, stating age, nationality, qualifications, and experience, with copies of recent testimonials or the names of referees, should be sent to the Administrative Officer, Haymeads Hospital, Bishop's Stortford, Herts.

BURNLEY GENERAL HOSPITAL. (656 Beds.) Burnley AND DISTRICT HOSPITAL MANAGEMENT COMMITTEE. RESIDENT HOUSE OFFICER (surgical). The post is now vacant and tenable for 6 months. Salary and conditions of service in accordance with the National Health Service terms. The post is recognised for the F.R.C.S. examination.

Applications, together with copies of 3 testimonials, should be sent forthwith to—

J. E. WHEATCROFT, Secretary to the Committee.
General Hospital, Casterton-avenue, Burnley.

BURNLEY. VICTORIA HOSPITAL. (171 Beds.) BURNLEY AND DISTRICT HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the appointment of SENIOR ORTHOPÆDIC HOUSE SURGEON which is tenable for 1 year. Salary £670 p.a. and conditions of service in accordance with the National Health Service terms.

Applications, together with copies of 3 testimonials, should be sent forthwith to—

J. E. WHEATCROFT, Secretary to the Committee.

General Hospital, Casterton-avenue, Burnley.

BURY AND ROSSENDALE HOSPITAL MANAGEMENT COMMITTEE.

Bury General Hospital (with continuation hospital 183 Beds—Acute General Hospital, mainly Surgical, with beds for Orthopædic, Medical, and other specialties)

HOUSE SURGEON. Post recognised for F.R.C.S.

Florence Nightingale Hospital and Aitken Sanatorium (I.D. 96 Beds; T.B. 94 Beds)

HOUSE PHYSICIAN.

Applications are invited for the above posts and should indicate age, nationality, qualifications, and experience, and should be sent to the undersigned as soon as possible.

H. WILKINSON, Secretary to the Committee.

Bury General Hospital, Bury, Lancs.

BRISTOL (near). WINFORD ORTHOPÆDIC HOSPITAL. (235 Beds.) SENIOR HOUSE OFFICERS. Applications are invited from registered medical practitioners to fill 2 vacancies which will occur in April and May, 1952. Positions are tenable for 12 months. Salary £670 p.a.

Apply, stating age, qualifications, and experience, with copies of testimonials, to the undersigned as soon as possible.

E. N. ROPER, Secretary-Administrator.

BROMSGROVE, WORCS. ALL SAINTS' HOSPITAL. MID-WORCESTERSHIRE HOSPITAL MANAGEMENT COMMITTEE.

2 HOUSE SURGEONS (for acute Surgical Wards, and Casualty Department).

HOUSE OFFICER (anæsthetics).

Vacancies exist for the above posts at this recently opened General Hospital which has a bed complement of 468 Beds. Posts are resident, and are vacant now.

Applications, with the names of 3 referees, to—

C. M. SMITH, Secretary,

Mid-Worcestershire Hospital Management Committee.

Birmingham-road, Bromsgrove, Worcs.

BEXHILL HOSPITAL, Bexhill-on-Sea. (62 Beds.) HASTINGS GROUP HOSPITAL MANAGEMENT COMMITTEE. HOUSE SURGEON required at above Hospital. National scale of salary.

Applications to Administrator at the Hospital.

BILLERICAY. ST. ANDREW'S HOSPITAL. Applications are invited from registered medical practitioners for the post of HOUSE SURGEON for the General Surgery and Orthopædic Departments of the above Hospital. These departments of this Hospital provide interesting and active traumatic experience. Resident. The post which is vacant immediately is for 6 months in the first instance.

Applications, together with copies of not more than 3 recent testimonials, should be forwarded to the undersigned as soon as possible. G. E. WHYTE, Secretary.

South East Essex Hospital Management Committee.

Thurrock Hospital, Grays, Essex.

BOLTON. THE ROYAL INFIRMARY. (237 Beds.) Required, RESIDENT HOUSE SURGEON for general surgical duties. Post vacant immediately and tenable for 6 months.

Applications, stating age, nationality, qualifications, and experience, together with the names of 2 persons to whom reference may be made, to be sent immediately to the undersigned at the Royal Infirmary, Bolton.

H. P. TRAVIS, Secretary, Bolton and District Hospital Management Committee.

CAMBRIDGE. THE UNITED CAMBRIDGE HOSPITALS. Applications are invited for the post of HOUSE SURGEON (first or subsequent post) at Addenbrooke's Hospital, vacant on 17th April, 1952. Salary, terms, and conditions as approved for hospital medical staff.

Applications, stating age, qualifications with dates, and nationality, and accompanied by copies of 3 recent testimonials, should be sent to the undersigned not later than Saturday, 1st March, 1952. J. A. BEARDSALL, Secretary.

CANTERBURY. KENT AND CANTERBURY HOSPITAL. (259 Beds.) CANTERBURY GROUP HOSPITAL MANAGEMENT COMMITTEE. GYNÆCOLOGICAL HOUSE SURGEON required at Highland Court annexe, which is a new unit of 30 gynæcological beds situated 3 miles from the above Hospital, with all ancillary services available. 6 months appointment. National Health Service conditions and salary.

Applications to be addressed to the Chief Administrative Officer at the Hospital.

CHERTSEY, SURREY. ST. PETER'S HOSPITAL (late Botleys Park War Hospital). (430 Beds.) Required, SENIOR HOUSE OFFICER, Orthopædic Department. Previous orthopædic experience not essential. Appointment very suitable for candidate reading for a higher qualification and is recognised by the Royal College of Surgeons for the F.R.C.S. Salary in accordance with terms and conditions of National Health Service.

Applications, together with names and addresses of referees, to Physician-Superintendent, as soon as possible.

CAERNARVON AND ANGLESEY HOSPITAL MANAGEMENT COMMITTEE. CAERNARVON AND ANGLESEY GENERAL HOSPITAL, BANGOR. Applications are invited for the appointment of HOUSE PHYSICIAN (first or subsequent post), resident, at the above Hospital. Appointment is for a period of 6 months.

Applications, stating age, experience, and qualifications, together with copies of 3 testimonials, should be forwarded to the Secretary, Plas Gwyn, Ffriddoedd-road, Bangor, N. Wales, within 10 days of the appearance of this advertisement.

CAERNARVON AND ANGLESEY HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the following appointments :—

Caernarvon and Anglesey General Hospital, Bangor

HOUSE SURGEON (resident).

HOUSE SURGEON (resident) for Casualties and Special Departments.

Llandudno General Hospital, Llandudno

Eryri General Hospital, Caernarvon

HOUSE SURGEONS (resident).

The appointments are for a period of 6 months. Salary and conditions of service in accordance with those approved by the Ministry of Health for first or subsequent posts.

Applications, stating age, experience, and qualifications, together with copies of 3 testimonials, should be forwarded, within 10 days of the appearance of this advertisement, to the Secretary, Plas Gwyn, Ffriddoedd-road, Bangor.

CAERNARVON AND ANGLESEY HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of SENIOR HOUSE OFFICER to the Orthopædic Unit in the area of this Hospital Management Committee. The Orthopædic Unit consists of 30 Beds at Eryri Hospital, Caernarvon, busy outpatient clinics at the Caernarvon and Anglesey General Hospital, Bangor, work in peripheral hospitals, &c. The post offers excellent experience in orthopædics and traumatic surgery. Salary and conditions of service in accordance with those approved by the Ministry of Health.

Applications, stating age, qualifications, details of previous hospital appointments, and 3 testimonials, to be forwarded to the Secretary, Plas Gwyn, Ffriddoedd-road, Bangor, within 10 days of the appearance of this advertisement.

CARLISLE. EAST CUMBERLAND HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the following resident posts for the 6 months commencing 1st April, 1952.

Cumberland Infirmary, Carlisle (322 Beds)

3 HOUSE OFFICERS (general surgery).

1 HOUSE OFFICER (casualty).

1 HOUSE OFFICER (orthopædic and fracture).

1 "SPECIALS" HOUSE OFFICER (E.N.T. and ophthalmic).

1 HOUSE OFFICER (gynæcology and obstetrics).

City General Hospital (146 Beds) and **City Maternity Hospital, Carlisle** (57 Beds)

1 HOUSE OFFICER (obstetrics and gynæcology).

Applications, giving the names of 2 referees, should be sent to the undersigned as soon as possible.

A. PICKERING, Secretary.

Cumberland Infirmary, Carlisle.

CHESTER. COUNTY MENTAL HOSPITAL. Applications are invited for the following vacant posts :—

(1) PSYCHIATRIC SENIOR HOUSE OFFICER. Salary £670 p.a.

(2) PSYCHIATRIC JUNIOR HOSPITAL MEDICAL OFFICER. Salary £700–£50–£1000 p.a.

Accommodation available for single man, or a house for a married man, for which a charge will be made. All forms of modern treatment available including insulin unit. There are psychiatric outpatient clinics at 3 General Hospitals, occupational therapy units and voluntary treatment wards. Facilities given to study for higher qualifications.

Apply Medical Superintendent.

CHESTERFIELD ROYAL HOSPITAL. (321 Beds.) CASUALTY OFFICER (House Officer) required immediately. National salary and conditions.

Apply— M. H. BOONE, Secretary,

Chesterfield Hospital Management Committee.

COBHAM, SURREY. SCHIFF HOME OF RECOVERY. (80 Beds.) RESIDENT HOUSE OFFICER (surgical) required at the above Hospital. Post vacant 2nd April, 1952, considered suitable for anyone reading for a higher examination.

Applications, stating age, qualifications, and experience, with copies of 3 recent testimonials, to be sent immediately to Group Secretary, Epsom District Hospital, Dorking-road, Epsom, Surrey.

COTTINGHAM, EAST YORKS. Senior House Officer for Raywell (48 Beds), HOUSE OFFICER for Castle Hill (221 Beds), to work under supervision of Consultant Chest Physician. Sanatoria part of group with major thoracic surgery and mass radiography units and laboratory facilities.

Application forms from Secretary, Hull B Group, De la Pole Hospital, Willerby, E. Yorks.

CROYDON GROUP HOSPITAL MANAGEMENT COMMITTEE. SOUTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD. Applications invited for appointment of PATHOLOGICAL REGISTRAR (whole-time) for duties in the Croydon group of hospitals, immediate vacancy.

Application forms obtainable from GEORGE A. PAINES, Secretary, Hospital Management Committee, General Hospital, Croydon, to be returned not later than 1st March, 1952.

CHICHESTER HOSPITAL MANAGEMENT COMMITTEE, SUSSEX. Locum REGISTRAR ANÆSTHETIST (non-resident) required mid-February for 2–3 months, pending proper appointment for which applicants also required. Salary £775 p.a. first year, £890 second year, &c. Work chiefly at Royal West Sussex and St. Richard's Hospitals, Chichester. Own car necessary.

Apply Group Secretary, Royal West Sussex Hospital, Chichester.

CHICHESTER. ROYAL WEST SUSSEX HOSPITAL. RESIDENT HOUSE SURGEON required for 6 months appointment at this General Acute Hospital of 202 Beds. 6 residents on staff, including R.S.O. and 3 House Surgeons. Vacancy occurs middle of February. National scale for first, second, or third post.

Applications, giving details of qualifications, age, and experience, should be forwarded to the Senior Administrative Officer at the Royal West Sussex Hospital.

CHICHESTER (near). ALDINGBOURNE HOUSE SANATORIUM (71 Beds), and BOGNOR REGIS ANNEXE (31 Beds). HOUSE PHYSICIAN (Male or Female) required immediately; liaison with Thoracic Unit, Chichester. Resident at Bognor Regis.

Apply to Physician-Superintendent, Aldingbourne House Sanatorium, near Chichester.

CHELMSFORD, ESSEX. BROOMFIELD HOSPITAL. Applications are invited for the position of RESIDENT MEDICAL REGISTRAR (chest diseases). For duties in pulmonary tuberculosis wards and assisting with tuberculous thoracic surgery. Occasional duty in clinics and Mass Radiography Unit. The appointment is subject to review after 1 year. A local charge will be made for residential amenities provided.

Applications (3 copies), stating date of birth, full details of qualifications, and experience, present appointment, grade, and salary, together with 2 copies of 2 recent testimonials, should reach C. E. NICOL, Secretary, North East Metropolitan Regional Hospital Board, 11A, Portland-place, London, W.1, by Saturday, 23rd February, 1952.

DENBIGH. THE NORTH WALES HOSPITAL FOR NERVOUS AND MENTAL DISORDERS. Applications are invited for the post of JUNIOR HOSPITAL MEDICAL OFFICER. Salary £700–£1000 p.a., less recognised charge for services provided by Hospital. Single quarters, or flat available for married man. The Hospital has modern treatment facilities and is associated under one Committee with the Child Guidance Service and Mental Deficiency Institutions in North Wales.

Applications, with names of 2 referees, to the Medical Superintendent.

S. L. FROST, Secretary to the Management Committee.

DERBY. DERBYSHIRE ROYAL INFIRMARY. Derby AREA NO. 1 HOSPITAL MANAGEMENT COMMITTEE. Applications are invited from registered medical practitioners for the post of HOUSE PHYSICIAN.

Applications, stating full details, together with copies of 2 recent testimonials, should be sent as soon as possible to the Secretary, Derbyshire Royal Infirmary, Derby.

DEWSBURY. STAINCLIFFE GENERAL HOSPITAL, Heald's-road, DEWSBURY, YORKS. (316 Beds.) Applications are invited for the appointment of HOUSE SURGEON, now vacant. This is a busy general hospital with the usual outpatient and ancillary services. It is recognised for the F.R.C.S., and provides excellent experience. Salary and conditions of service in accordance with the national scale.

Applications, stating age, nationality, qualifications, and experience, together with copies of 2 recent testimonials, should be sent to the Secretary, Dewsbury, Batley and Mirfield Hospital Management Committee, 20, Oxford-road, Dewsbury.

DEWSBURY. THE GENERAL HOSPITAL, Moorlands- road, DEWSBURY. (119 Beds.) Applications are invited for the appointment of HOUSE PHYSICIAN, vacant 1st March, 1952. This is a modern general hospital with a large Outpatient Department. Excellent experience available.

Applications, stating age, nationality, qualifications, and experience, together with recent testimonials, should be submitted to the Secretary, Dewsbury, Batley and Mirfield Hospital Management Committee, 20, Oxford-road, Dewsbury.

DEWSBURY. THE GENERAL HOSPITAL, Moorlands- road, DEWSBURY. (119 Beds.) Applications are invited for the appointment of HOUSE SURGEON, now vacant. This is a busy modern General Hospital, with a large Outpatient Department and the usual ancillary services. The hospital is recognised for the F.R.C.S. and provides excellent experience.

Applications, stating age, nationality, qualifications, and experience, together with recent testimonials, should be submitted to the Secretary, Dewsbury, Batley and Mirfield Hospital Management Committee, 20, Oxford-road, Dewsbury.

DONCASTER ROYAL INFIRMARY. Doncaster Hospital MANAGEMENT COMMITTEE. Applications are invited from registered medical practitioners with the necessary experience for the appointment of ORTHOPÆDIC HOUSE SURGEON at above Infirmary in the grade of Senior House Officer. Salary at the rate of £670 p.a., from which a deduction of £130 p.a. will be made for board, residence, &c.

Applications, stating age, qualifications, and details of present and previous appointments with dates, together with copies of 3 testimonials, should be forwarded to the undersigned by 1st March, 1952.

ARTHUR JONES, Secretary to the Committee.

Doncaster Royal Infirmary.

DORCHESTER. DORSET COUNTY HOSPITAL. (109 Beds.) HOUSE PHYSICIAN (Male or Female) required, post now vacant and tenable for 6 months.

Applications, giving details of age, experience, qualifications, and nationality, together with copies of testimonials, to be sent to the Secretary, West Dorset Group Hospital Management Committee, Damers-road, Dorchester, Dorset, immediately.

DUNFERMLINE. NORTHERN HOSPITAL. West FIFE HOSPITALS BOARD OF MANAGEMENT. HOUSE PHYSICIAN required 1st April. Salary £350–£450, less £100 for board, lodging, &c. The Northern Hospital is being developed as a medical unit of approximately 120 Beds and will provide ample clinical material and a varied experience.

Applications, stating age, nationality, qualifications, and experience, with copies of 3 testimonials, should be forwarded to the Medical Superintendent, The Northern Hospital, Leys Park-road, Dunfermline.

DORKING GENERAL HOSPITAL, Horsham-road, DORKING, SURREY. REDHILL GROUP HOSPITAL MANAGEMENT COMMITTEE. RESIDENT SENIOR HOUSE OFFICER in Obstetrics and Gynæcology (with some general surgery), vacant 25th February, 1952, for 1 year's appointment (renewable). The post is recognised for the D.Obst. R.C.O.G.

Apply to the Medical Superintendent.

DORKING GENERAL HOSPITAL, Horsham-road, DORKING, SURREY. REDHILL GROUP HOSPITAL MANAGEMENT COMMITTEE. RESIDENT SENIOR HOUSE OFFICER (surgical), vacant end February, 1952. The post affords good experience in general surgery and casualty work.

Apply to the Medical Superintendent.

DRIFFIELD. EAST RIDING GENERAL HOSPITAL. HOUSE PHYSICIAN required, post vacant end of February. Duties to include medical wards, outpatients, and anæsthetics. Salary £350–£450 p.a.

Detailed applications, with copies of references, to the Secretary, Westwood Hospital, Beverley, Yorks.

DUDLEY, STOURBRIDGE AND DISTRICT HOSPITAL GROUP. BIRMINGHAM REGION. Applications invited from registered practitioners for following appointments:—

The Guest Hospital, Dudley (154 Beds)

HOUSE SURGEON, post now vacant.

Corbett Hospital, Stourbridge (106 Beds)

CASUALTY OFFICER, post now vacant.

SENIOR HOUSE OFFICER (resident), surgical, post now vacant. Salary £670 p.a., less £150 p.a. in respect of residential emoluments.

Prestwood Sanatorium (200 Beds)

RESIDENT HOUSE OFFICER, post now vacant.

Wordsley Hospital, near Stourbridge (450 Beds)

SENIOR HOUSE OFFICER (Resident Anæsthetist), post now vacant. Salary £670 p.a., less £150 p.a. in respect of residential emoluments.

SENIOR HOUSE OFFICER (resident), surgical, post vacant 15th March. Salary £670 p.a., less £150 p.a. in respect of residential emoluments.

Applications, stating age, experience, with copies of 3 recent testimonials, to—

H. RAYMOND HURST,
Secretary to the Management Committee.

The Guest Hospital, Dudley.

EDGWARE GENERAL (formerly Redhill County) HOS- PITAL, EDGWARE, MIDDLESEX. (715 Beds.) RESIDENT GENITO-URINARY HOUSE SURGEON. Post vacant 17th March, 1952. Salary £400–£450 p.a., according to experience. Deduction of £100 p.a. for board, lodging, &c. 6 months appointment. Post recognised for F.R.C.S.

Applications, stating age, qualifications, experience, and enclosing copies of up to 3 recent testimonials, to Medical Director of Hospital by 1st March, 1952.

EAST ANGLIAN REGIONAL HOSPITAL BOARD. MEDICAL REGISTRAR at the United Norwich Hospitals. Ward duties at the West Norwich Hospital and outpatient clinics at the Norfolk and Norwich Hospital. Appointment for 1 year, renewable for second year.

Applications, stating age, qualifications, and details of present and previous appointments, together with the names of 3 referees, should reach the undersigned not later than 3rd March, 1952. Candidates are invited to visit the hospitals by direct arrangement with the Hospital Management Committee Secretary at the Norfolk and Norwich Hospital, Norwich.

K. V. F. MORTON, Secretary.

117, Chesterton-road, Cambridge.

EAST ANGLIAN REGIONAL HOSPITAL BOARD. SENIOR REGISTRAR in Obstetrics and Gynæcology at the United Norwich Hospitals. Candidates must possess the M.R.C.O.G.

Applications, stating age, qualifications, and details of present and previous appointments, together with the names of 3 referees, should reach the undersigned not later than 3rd March, 1952. Candidates are invited to visit the hospitals by direct arrangement with the Hospital Management Committee Secretary at the Norfolk and Norwich Hospital.

K. V. F. MORTON, Secretary.

117, Chesterton-road, Cambridge.

EAST ANGLIAN REGIONAL HOSPITAL BOARD. RESIDENT SURGICAL OFFICER (Registrar grade), North Cambridgeshire Hospital, Wisbech. The appointment will be for 1 year, renewable for second year.

Applications, stating age, qualifications, and details of present and previous appointments, together with the names of 3 referees, should reach the undersigned not later than 3rd March, 1952. Candidates are invited to visit the Hospital by arrangement with the Hospital Management Committee Secretary, Peterborough Memorial Hospital, Peterborough.

K. V. F. MORTON, Secretary.

117, Chesterton-road, Cambridge.

EAST ANGLIAN REGIONAL HOSPITAL BOARD. MEDICAL REGISTRAR at Ipswich Sanatorium (120 Beds). Duties will include work in the Thoracic Surgical Unit and in the Ipswich Chest Clinic. A flat is available.

Applications, stating age, qualifications, and details of present and previous appointments, together with the names of 3 referees, should reach the undersigned not later than 3rd March, 1952. Candidates are invited to visit the sanatorium by direct arrangement with the Physician-Superintendent.

K. V. F. MORTON, Secretary.

117, Chesterton-road, Cambridge.

EPSOM DISTRICT HOSPITAL, Dorking-road, Epsom, SURREY. (300 Beds.) RESIDENT HOUSE OFFICER (surgical) required at the above Hospital. Full Consultant staff. Post recognised by Royal College of Surgeons is now vacant.

Applications, stating age, qualifications, and experience, with copies of 3 recent testimonials, to be sent immediately to Group Secretary, at above address.

GRIMSBY GENERAL HOSPITAL. (220 Beds.) Grimsby HOSPITALS MANAGEMENT COMMITTEE. Applications are invited for post, vacant now, of RESIDENT SENIOR GYNÆCOLOGICAL HOUSE SURGEON (Male or Female), for duties at the above Hospital, and Scartho Road Infirmary, Grimsby.

Apply to Administrative Officer, Grimsby General Hospital.

GRIMSBY GENERAL HOSPITAL. (220 Beds.) Grimsby HOSPITALS MANAGEMENT COMMITTEE. Applications are invited for the post of HOUSE PHYSICIAN. The post will fall vacant in February, and is tenable for 6 months.

Applications together with the names of 2 referees, should be sent to the Administrative Officer, Grimsby General Hospital.

GRIMSBY GENERAL HOSPITAL. Sheffield Regional HOSPITAL BOARD. Applications are invited from registered medical practitioners for the resident whole-time post of REGISTRAR (orthopædics) to the above Hospital. The appointment is for 1 year in the first instance and may be renewed for a further year.

Applications, giving age, nationality, qualifications, present and previous appointments with dates, together with names and addresses of 3 referees, should be sent to the Secretary, Sheffield Regional Hospital Board, Fulwood House, Old Fulwood-road, Sheffield, 10, to arrive not later than 25th February, 1952.

GRIMSBY AND DISTRICT GENERAL HOSPITAL. SHEFFIELD REGIONAL HOSPITAL BOARD. Applications are invited from registered medical practitioners for the resident whole-time post of REGISTRAR (anæsthetics) to the above Hospital, which is recognised for training for the D.A. The appointment is for 1 year in the first instance and may be renewed for a further year.

Applications, giving age, nationality, qualifications, present and previous appointments with dates, together with names and addresses of 3 referees, should be sent to the Secretary, Sheffield Regional Hospital Board, Fulwood House, Old Fulwood-road, Sheffield, 10, to arrive not later than 4th March, 1952.

GRIMSBY. SCARTHO ROAD INFIRMARY. (218 Beds.) GRIMSBY HOSPITALS MANAGEMENT COMMITTEE. Applications are invited for the post of JUNIOR HOSPITAL MEDICAL OFFICER. The Officer appointed will have charge of 40 surgical beds, under visiting Consultant's care, attend operating sessions, &c., and share routine ward duties. A furnished flat is available and married candidates may apply.

Applications, stating age, nationality, qualifications, and experience, with copies of recent testimonials or names of referees, to Administrative Officer.

GUILDFORD. ROYAL SURREY COUNTY HOSPITAL. (229 Beds.) HOUSE SURGEON required for general surgery only. The post is recognised for the F.R.C.S. examination and is vacant early in March.

Apply, with copies of 3 testimonials, to Secretary-Superintendent.

FALMOUTH. DISTRICT HOSPITAL. West Cornwall HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of HOUSE PHYSICIAN, vacant 26th February, 1952. Salary and conditions of service in accordance with the terms laid down by the Ministry of Health.

Applications, stating age, nationality, qualifications, and experience, and enclosing copies of 2 recent testimonials, should be forwarded to the Administrative Assistant, Falmouth and District Hospital, Falmouth.

HASTINGS. ST. HELEN'S HOSPITAL. (452 Beds.) HASTINGS GROUP HOSPITAL MANAGEMENT COMMITTEE. HOUSE OFFICER (obstetrics), Male or Female, resident, required at above Hospital, vacant 10th March, 1952. Post is recognised for D.Obst.R.C.O.G. National scale of salary.

Applications to Administrator at the Hospital.

HASLEMERE AND DISTRICT HOSPITAL. (82 Beds.) SOUTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD. GUILDFORD GROUP HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of SURGICAL REGISTRAR (general). Unfurnished house available. Candidates may visit the Hospital by arrangement.

Application forms are obtainable from the Secretary, Guildford Group Hospital Management Committee, Group Office, St. Luke's Hospital, Guildford (stamped addressed envelope), and should be returned to the Secretary, duly completed, to arrive not later than 7th March, 1952.

HOVE GENERAL HOSPITAL, Sussex. (75 Beds— 3 Resident Medical Officers.) BRIGHTON AND LEWES HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the following resident posts, vacant mid-March, 1952 :—

SENIOR HOUSE SURGEON (preference will be given to candidates with previous experience). Duties chiefly ward and theatre work.

HOUSE SURGEON for casualty and with charge of surgical beds.

Salaries and conditions of service in accordance with national scale—£350–£450, less £100 p.a. for residential emoluments.

Applications, with full details of experience, &c., and enclosing names and addresses of 2 referees, should be sent to the Administrative Officer at the Hospital within 10 days of the appearance of this advertisement.

HOUNSLOW HOSPITAL, Staines-road, Hounslow, MIDDLESEX. (General Acute—81 Beds.) STAINES GROUP HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the appointment of RESIDENT HOUSE SURGEON with duties in the Casualty Department, post vacant 25th March, 1952. 6 months appointment. Salary £350, £400, or £450 p.a., according to experience, less £100 for residence.

Applications, stating age, experience, nationality, qualifications, with copies of up to 3 recent testimonials, to be sent to Assistant Secretary of Hospital.

HUNTINGDON COUNTY HOSPITAL. Applications are invited from registered medical practitioners for the post of JUNIOR HOUSE OFFICER (medical) to the above Hospital. The selected candidate will be required to look after medical and pædiatric cases under the direction of the Consultants concerned, and may be required to give some emergency anæsthetics.

Apply, with full particulars and names of 2 referees, to Secretary, Hospital Management Committee, Newmarket General Hospital, Newmarket.

HUNTINGDON COUNTY HOSPITAL. Applications are invited from registered medical practitioners for the post of JUNIOR HOUSE OFFICER (general surgery) to the above Hospital. This is a busy Hospital staffed by Consultants from Cambridge, and there is a full-time Surgical Officer on the staff.

Apply, with full particulars and names of 2 referees, to Secretary, Hospital Management Committee, Newmarket General Hospital, Newmarket.

HEMEL HEMPSTEAD. WEST HERTS HOSPITAL. (170 Beds—4 Residents.) Applications are invited for the post of HOUSE SURGEON (first or subsequent post) for a term of 6 months.

Applications, with full details, and copies of 2 recent testimonials, should be sent to the Administrator.

HUDDERSFIELD ROYAL INFIRMARY. (321 Beds.) HUDDERSFIELD HOSPITAL MANAGEMENT COMMITTEE. HOUSE SURGEON to the Gynæcological and Abnormal Maternity Department, required to commence duties on 1st April, 1952. Salary in accordance with terms and conditions of service for hospital medical and dental staffs, with full residential emoluments.

Applications, together with copies of 3 recent testimonials, to be addressed to the undersigned as soon as possible.

H. J. JOHNSON, Secretary to the Management Committee.
The Royal Infirmary, Huddersfield.

HUDDERSFIELD ROYAL INFIRMARY. (321 Beds.) HUDDERSFIELD HOSPITAL MANAGEMENT COMMITTEE. HOUSE PHYSICIAN required to commence duty 4th March. Salary in accordance with the terms and conditions of service for hospital medical and dental staffs.

Applications, together with copies of 3 recent testimonials, should be addressed to the undersigned.

H. J. JOHNSON, Secretary to the Management Committee.
The Royal Infirmary, Huddersfield.

HULL. VICTORIA HOSPITAL FOR SICK CHILDREN, Park-street, HULL. (143 Beds.) Applications are invited for the post of HOUSE SURGEON, now vacant. The post is for a term of 6 months and counts towards qualification D.C.H. Salary is in accordance with terms of service issued by the Ministry of Health.

Applications, together with testimonials, to be sent to the Administrative Officer, Hull A Group Hospital Management Committee, at the above address.

ISLEWORTH. WEST MIDDLESEX HOSPITAL. South WEST MIDDLESEX HOSPITAL MANAGEMENT COMMITTEE. HOUSE OFFICER (first, second, or third post), full-time, resident, Orthopædic Unit.

Applications (endorsed "House Officer, Orthopædic Unit, W.M.H."), stating age, nationality, qualifications, and experience, with copies of up to 3 recent testimonials, to Secretary, West Middlesex Hospital, Isleworth, by 26th February, 1952.

ISLEWORTH. WEST MIDDLESEX HOSPITAL. South WEST MIDDLESEX HOSPITAL MANAGEMENT COMMITTEE. HOUSE OFFICER (second or third post), full-time, resident, Department of Psychiatry. Previous medical experience essential and psychiatric experience an advantage. Department includes a neurosis centre and observation wards, and conducts extensive outpatient service.

Applications (endorsed "House Officer, Psychiatry, W.M.H."), stating age, nationality, qualifications, and experience, with copies of up to 3 recent testimonials, to Secretary, West Middlesex Hospital, Isleworth, by 26th February, 1952.

ISLEWORTH. WEST MIDDLESEX HOSPITAL. South WEST MIDDLESEX HOSPITAL MANAGEMENT COMMITTEE. HOUSE OFFICER (first, second, or third post), resident, general surgery.

Applications (endorsed "House Officer, General Surgery, West Middlesex Hospital"), stating age, nationality, qualifications, and experience, with copies of up to 3 recent testimonials, to Secretary of the Committee, West Middlesex Hospital, Isleworth, Middlesex, by 26th February, 1952.

ISLEWORTH. WEST MIDDLESEX HOSPITAL. South WEST MIDDLESEX HOSPITAL MANAGEMENT COMMITTEE. HOUSE OFFICER (first, second, or third, preferably second or third, post) required for Geriatric Unit. Resident post.

Applications, stating age, nationality, qualifications, and experience, with copies of up to 3 recent testimonials, to the Secretary, Management Committee, West Middlesex Hospital, Isleworth, Middlesex. Closing date 26th February, 1952.

ISLEWORTH. WEST MIDDLESEX HOSPITAL. South WEST MIDDLESEX HOSPITAL MANAGEMENT COMMITTEE. HOUSE OFFICER (preferably second or third post) required for Specials Unit, comprising E.N.T., Plastic, and Ophthalmic Departments.

Applications, stating age, nationality, qualifications with dates, and details of experience, together with copies of up to 3 recent testimonials, to Secretary, Management Committee, West Middlesex Hospital, Isleworth, Middlesex. Closing date 26th February, 1952.

KIDDERMINSTER AND DISTRICT GENERAL HOSPITAL. (117 Beds.) MID-WORCESTERSHIRE HOSPITAL MANAGEMENT COMMITTEE.

2 HOUSE SURGEONS.
HOUSE PHYSICIAN.
Resident posts, vacant now.

Applications, giving the names of 3 referees, should be sent to the Administrative Officer of the Hospital.

KINGSTON HOSPITAL, Wolverton-avenue, Kingston UPON THAMES. KINGSTON GROUP HOSPITAL MANAGEMENT COMMITTEE. Applications are invited from suitably qualified, experienced medical practitioners for the position of HOUSE OFFICER (general medicine), resident. The post will be vacant on 1st April, 1952.

Applications by letter, stating age, qualifications, and experience, with copies of not more than 3 recent testimonials or names of 3 referees, should reach the Physician-Superintendent as soon as possible.

IPSWICH. EAST SUFFOLK AND IPSWICH HOSPITAL. (360 Beds.) IPSWICH GROUP HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the following posts :—

CASUALTY OFFICER AND ASSISTANT HOUSE PHYSICIAN.

SENIOR HOUSE SURGEON, (fracture and orthopædic).

HOUSE SURGEON, (fracture and orthopædic).

Applications immediately to Secretary, Hospital Management Committee.

IPSWICH. BOROUGH GENERAL HOSPITAL. (301 Beds.) HOUSE PHYSICIAN (House Officer grade) required early March. Post normally for 6 months.

Applications to Secretary, Ipswich Group Hospital Management Committee, Ipswich.

IPSWICH. BOROUGH GENERAL HOSPITAL, Heath-road, IPSWICH. (301 Beds—post recognised for Examinations of R.C.S.) 2 HOUSE SURGEONS (general surgery), posts vacant mid-February. House Officer grade appointments normally for 6 months.

Applications to the Administrative Officer.

KEIGHLEY AND DISTRICT VICTORIA HOSPITAL, KEIGHLEY (146 Beds), BINGLEY HOSPITAL, BINGLEY (68 Beds), YORKSHIRE, WEST RIDING. (Full Consultant staffs.) Applications are invited for the appointment of SENIOR HOUSE OFFICER (either sex) in Anæsthetics for duty at the above Hospitals for the acute sick, resident at Keighley Victoria Hospital, vacant now. 12 months appointment. Salary £670 p.a. National Health Service terms and conditions.

Applications, stating age, qualifications, experience, and nationality, together with copies of recent testimonials, to be forwarded as soon as possible to the Secretary, Bingley, Keighley, Skipton and Settle Hospital Management Committee, St. John's Hospital, Keighley.

KEIGHLEY AND DISTRICT VICTORIA HOSPITAL, KEIGHLEY (146 Beds), BINGLEY HOSPITAL, BINGLEY (68 Beds), SKIPTON GENERAL HOSPITAL, SKIPTON (64 Beds), YORKSHIRE, WEST RIDING. (Full Consultant staffs.) Applications are invited for the appointment of RESIDENT HOUSE SURGEON (either sex), first, second, or third appointments, at each of the above Hospitals, now vacant. 6 months appointments. Salary in accordance with the National Health Service terms and conditions.

Applications, stating age, qualifications, experience, and nationality, together with copies of recent testimonials, to be forwarded as soon as possible to the Secretary, Bingley, Keighley, Skipton and Settle Hospital Management Committee, St. John's Hospital, Keighley.

KETTERING GENERAL HOSPITAL. Applications are invited from registered practitioners for the post of SENIOR HOUSE OFFICER to the Casualty, Orthopædic, and Traumatic Departments of the Hospital.

Applications, together with copies of testimonials, to be sent to the undersigned as soon as possible.

G. H. FENNELL, Assistant Secretary,
Kettering and District Hospital Management Committee.

LEEDS. THE BOARD OF GOVERNORS OF THE UNITED LEEDS HOSPITALS AND THE LEEDS REGIONAL HOSPITAL BOARD jointly invite applications for the appointment of REGISTRAR in Genito-urinary Surgery. The Outpatient and Diagnostic Department is at the Leeds General Infirmary and the ward unit is in St. James's Hospital, Leeds.

Applications, stating age, qualifications, and details of present and previous appointments with dates, together with the names of 3 referees, should be forwarded to the Secretary, Joint Registrars Committee, Park-parade, Harrogate, not later than 29th February, 1952.

LEEDS REGIONAL HOSPITAL BOARD invites applications for the appointment of a REGISTRAR in General Medicine (non-resident) for duties at hospitals in the York A group.

Applications, stating age, qualifications, and details of present and previous appointments with dates, together with the names of 3 referees, should be forwarded to the Secretary, Joint Registrars Committee, Park-parade, Harrogate, not later than 23rd February, 1952.

LEAMINGTON SPA. WARNEFORD GENERAL HOSPITAL. (207 Beds—General.) Applications are invited from registered medical practitioners for the appointment of HOUSE PHYSICIAN, post vacant on the 17th March, 1952. Salary £350–£450, dependent on experience, less £100 p.a. for residential emoluments.

Applications, together with 2 recent testimonials, should be sent to the Hospital Secretary, as soon as possible.

LEAMINGTON SPA. WARNEFORD GENERAL HOSPITAL. (207 Beds—General.) HOUSE SURGEON for Ophthalmic and E.N.T. Departments, tenure of post 6 months. Salary dependent on the number of posts previously held and in accordance with the terms and conditions of service for hospital medical staff.

Apply as soon as possible to the Hospital Secretary.

LEAMINGTON SPA. WARNEFORD GENERAL HOSPITAL. (207 Beds—General.) HOUSE SURGEON (first post), general surgery required. Salary £350 p.a., less £100 residential emoluments, in accordance with the terms and conditions of service for hospital medical staff.

Apply as soon as possible to—

Miss V. WELLS, Hospital Secretary.

LEICESTER ROYAL INFIRMARY. Applications are invited for the post of HOUSE SURGEON to the E.N.T. Department for a period of 6 months from 1st April, 1952. The post is recognised for the D.L.O. and the F.R.C.S.

Applications, stating age, experience, and qualifications, together with copies of recent testimonials, to the Secretary, No. 1 Hospital Management Committee, 38A, East Bond-street, Leicester.

LEICESTER ROYAL INFIRMARY. Applications are invited for the post of SENIOR HOUSE OFFICER (anæsthetics), commencing 1st April, 1952.

Applications, stating age, experience, and qualifications, together with copies of recent testimonials, to the Secretary, No. 1 Hospital Management Committee, 38A, East Bond-street, Leicester.

LEICESTER ROYAL INFIRMARY. Applications are invited for the post of CASUALTY OFFICER AND HOUSE SURGEON, for a period of 9 months from 1st April. The first 3 months will be served as Casualty Officer and Deputy House Surgeon to future chief. The post of House Surgeon recognised for the F.R.C.S.

Applications, stating age, experience, and qualifications, together with copies of recent testimonials, to the Secretary, No. 1 Hospital Management Committee, 38A, East Bond-street, Leicester.

LEICESTER ROYAL INFIRMARY. Applications are invited for the post of SENIOR HOUSE OFFICER (orthopædic) for duties at the Leicester General Hospital and the Leicester Royal Infirmary. Fracture and Orthopædic Service. The successful candidate may either be non-resident or resident at the General Hospital.

Applications, stating age, experience, and qualifications, together with copies of recent testimonials, to the Secretary, No. 1 Hospital Management Committee, 38A, East Bond-street, Leicester.

LEICESTER ROYAL INFIRMARY. Applications are invited for the post of HOUSE SURGEON for a period of 6 months from 1st April, 1952. Post is recognised for the F.R.C.S.

Applications, stating age, experience, and qualifications, together with copies of recent testimonials, to the Secretary, No. 1 Hospital Management Committee, 38A, East Bond-street, Leicester.

LEICESTER GENERAL HOSPITAL AND ROYAL INFIRMARY. SHEFFIELD REGIONAL HOSPITAL BOARD. Applications are invited from registered medical practitioners for the whole-time post of REGISTRAR (orthopædics) to the above hospitals which are recognised for the F.R.C.S. Accommodation can be provided if required. The appointment is for 1 year in the first instance and may be renewed for a further year.

Applications, giving age, nationality, qualifications, present and previous appointments with dates, together with names and addresses of 3 referees, should be sent to the Secretary, Sheffield Regional Hospital Board, Fulwood House, Old Fulwood-road, Sheffield, 10, to arrive not later than 6th March, 1952.

LEICESTER GENERAL HOSPITAL. Applications are invited for the locum tenens post of SENIOR HOUSE OFFICER (anæsthetics) for the period of March, 1952.

Applications, stating age, experience, and qualifications, together with copies of recent testimonials, to the Senior Administrator.

LEICESTER GENERAL HOSPITAL. (445 Beds.) Applications are invited for the posts of 2 HOUSE SURGEONS commencing 1st April, 1952. Recognised for the F.R.C.S.

Applications, stating age, experience, and qualifications, together with copies of recent testimonials, to the Secretary, No. 1 Hospital Management Committee, 38A, East Bond-street, Leicester.

LEICESTER GENERAL HOSPITAL. (445 Beds.) Applications are invited for the post of SENIOR HOUSE OFFICER (anæsthetics) commencing 1st April, 1952. Recognised for the D.A.

Applications, stating age, experience, and qualifications, together with copies of recent testimonials, to Secretary, No. 1 Hospital Management Committee, 38A, East Bond-street, Leicester.

LEICESTER GENERAL HOSPITAL. (445 Beds.) Applications are invited for the post of HOUSE SURGEON (orthopædics) commencing 1st April, 1952.

Applications, stating age, experience, and qualifications, together with copies of recent testimonials, to the Secretary, No. 1 Hospital Management Committee, 38A, East Bond-street, Leicester.

LOUTH, LINCS. COUNTY INFIRMARY. (240 Beds.) GRIMSBY HOSPITALS MANAGEMENT COMMITTEE. Applications are invited for the post of HOUSE OFFICER (medical), vacant 1st March, at this busy General Hospital. Salary £350–£450 p.a.

Applications, giving details of age, experience, nationality, together with names of 2 referees, to be addressed to the Administrative Officer at the Hospital.

LINCOLN. ST. GEORGE'S HOSPITAL. (126 Beds.) Applications are invited for the post of RESIDENT MEDICAL OFFICER within the Junior Hospital Medical Officer grade at the above Hospital. Salary and conditions of service in accordance with the terms for hospital medical staff. Salary being at the rate of £700–£50–£1000 p.a.

Applications, stating age, qualifications, and experience, together with copies of recent testimonials, should be forwarded to the undersigned as soon as possible.

R. W. HOWICK, Secretary,
Lincoln No. 1 Hospital Management Committee.
County Hospital, Lincoln.

MAIDENHEAD HOSPITAL, St. Luke's-road, Maidenhead, BERKS. (100 Beds.) Applications are invited for the post of HOUSE SURGEON, now vacant. Salary on national scale.

Applications, stating age, qualifications, and experience, together with copies of testimonials, should be sent to the Administrative Officer.

MAIDENHEAD HOSPITAL, St. Luke's-road, Maidenhead, BERKS. (100 Beds.) Applications are invited for the post of HOUSE SURGEON to the Accident Department. Salary authorised at £50 p.a. higher than the standard rate.

Applications, stating age, qualifications, and experience, together with copies of testimonials, should be sent to the Administrative Officer.

LOUGHBOROUGH GENERAL HOSPITAL. (120 Beds.) Applications are invited for the post of HOUSE PHYSICIAN, commencing 1st April, 1952.

Applications, stating age, experience, and qualifications, with copies of recent testimonials, to reach the Secretary, No. 1 Hospital Management Committee, 38A, East Bond-street, Leicester.

LOUGHBOROUGH GENERAL HOSPITAL. (120 Beds.) Applications are invited for the vacancy of HOUSE SURGEON, commencing 1st April, 1952.

Applications, stating age, qualifications, and experience, together with copies of recent testimonials, to the Secretary, Leicester No. 1 Hospital Management Committee, 38A, East Bond-street, Leicester.

MANCHESTER, 20. CHRISTIE HOSPITAL AND HOLT RADIUM INSTITUTE. SOUTH MANCHESTER HOSPITAL MANAGEMENT COMMITTEE. Applications are invited from registered practitioners for the post of HOUSE OFFICER or SENIOR HOUSE OFFICER. The post will give successful candidate the opportunity of experience in modern radiotherapy and admission to the Diploma Course in Radiotherapy.

Applications, stating age, experience, and qualifications, to be forwarded to the undersigned not later than 29th February, 1952.

A. H. KEATES, Secretary to the Committee.

MANCHESTER. BAGULEY HOSPITAL, Wythenshawe. SOUTH MANCHESTER HOSPITAL MANAGEMENT COMMITTEE. Applications are invited from registered practitioners for the post of RESIDENT SENIOR HOUSE OFFICER on the Surgical Unit. The Hospital is the main Regional Centre for Thoracic Surgery in the treatment of pulmonary tuberculosis. The successful candidate will be attached to the Thoracic Surgical Team.

Applications, stating age, nationality, qualifications, experience, and names of 2 referees, to be forwarded to the undersigned not later than 28th February, 1952.

A. H. KEATES, Secretary to the Committee.

Christie Hospital and Holt Radium Institute, Manchester, 20.

MANCHESTER VICTORIA MEMORIAL JEWISH HOSPITAL, CHEETHAM, MANCHESTER, 8. (Non-Sectarian—105 Beds.) Applications are invited for the post of HOUSE SURGEON (House Officer grade), vacant 13th March, 1952.

Applications, together with copies of not less than 2 recent testimonials or names of 2 referees, to the Hospital Administrator forthwith.

MANCHESTER REGIONAL HOSPITAL BOARD invite applications for the post of REGISTRAR in Radiology to the North Manchester group of hospitals, with main duties at Ancoats Hospital, Manchester. Previous experience in radiology is essential and possession of the D.M.R.D. desirable.

Forms of application may be obtained from the Senior Administrative Medical Officer, Manchester Regional Hospital Board, Cheetwood-road, Manchester, 8, and should be returned, with copies of 2 recent testimonials, to be received by 25th February, 1952.

MANCHESTER REGIONAL HOSPITAL BOARD invite applications for the post of SENIOR REGISTRAR in Infectious Diseases at Monsall Hospital, Manchester. Good training in general medicine and a higher qualification is desirable. The post will be held primarily for 1 year and provides very good experience in the diagnosis and treatment of most infectious diseases.

Forms of application may be obtained from the Senior Administrative Medical Officer, Manchester Regional Hospital Board, Cheetwood-road, Manchester, 8, and should be returned, with the names of 3 referees, to be received not later than 3rd March, 1952.

MANCHESTER REGIONAL HOSPITAL BOARD AND THE BOARD OF GOVERNORS OF THE UNITED MANCHESTER HOSPITALS invite applications for a SENIOR REGISTRAR post in Diagnostic Radiology. The person appointed will be required to undertake duties at the Christie Hospital and Holt Radium Institute, Manchester, and at the United Manchester Hospitals (Manchester Royal Infirmary, &c.). Possession of the D.M.R.D. is essential.

Forms of application may be obtained from the Senior Administrative Medical Officer, Manchester Regional Hospital Board, Cheetwood-road, Manchester, 8, and should be returned, with the names of 3 referees, to be received by 3rd March, 1952.

MANCHESTER REGIONAL HOSPITAL BOARD AND THE BOARD OF GOVERNORS OF THE UNITED MANCHESTER HOSPITALS invite applications for a SENIOR REGISTRAR post in Paediatrics at the Royal Manchester Children's Hospital, Pendlebury, and St. Mary's Hospitals, Manchester. Previous experience in paediatrics and a higher qualification are essential.

Forms of application may be obtained from the Senior Administrative Medical Officer, Manchester Regional Hospital Board, Cheetwood-road, Manchester, 8, and should be returned, with the names of 3 referees, to be received by 3rd March, 1952.

MANCHESTER, 19. THE DUCHESS OF YORK HOSPITAL FOR BABIES. MANCHESTER BABIES' AND CHILDREN'S HOSPITAL MANAGEMENT COMMITTEE. Required, HOUSE PHYSICIAN (first or subsequent post), Male or Female, for 6 months from 1st March, 1952. Salary in accordance with Ministry of Health scale.

Applications, with copies of 3 testimonials, to be sent to the Administrative Officer of the Hospital immediately.

MANCHESTER (near). ALTRINCHAM GENERAL HOSPITAL. (130 Beds.) NORTH AND MID-CHESHIRE HOSPITAL MANAGEMENT COMMITTEE. Required, HOUSE OFFICER (surgical) to commence duties immediately. This is a busy hospital, staffed by Manchester Consultants and a full-time Senior House Officer. Salary £350–£450 p.a., according to previous posts held, less residential emoluments.

Applications should be sent to the Secretary, North and Mid-Cheshire Hospital Management Committee, The Hospital, Sinderland-road, Altrincham, Cheshire.

MANCHESTER (near). ALTRINCHAM GENERAL HOSPITAL. (130 Beds.) NORTH AND MID-CHESHIRE HOSPITAL MANAGEMENT COMMITTEE. Required, HOUSE OFFICER (Physician and casualty) to commence duties immediately. This is a busy hospital, staffed by Manchester Consultants and a full-time Senior House Officer. Salary £350–£450 p.a., according to previous posts held, less residential emoluments.

Applications should be sent to the Secretary, North and Mid-Cheshire Hospital Management Committee, The Hospital, Sinderland-road, Altrincham, Cheshire.

MANCHESTER. WEST MANCHESTER HOSPITAL MANAGEMENT COMMITTEE. Applications are invited from registered medical practitioners for the following posts:—

Park Hospital, Davyhulme (General Hospital—120 Beds)

SENIOR HOUSE OFFICER, vacant on 31st March, 1952.
HOUSE OFFICER (casualty and orthopaedic), now vacant.
HOUSE OFFICER (E.N.T.), now vacant.

The casualty and orthopaedic post is recognised for training for the F.R.C.S. examination.

Vacancies occur periodically in the various departments at Park Hospital and House Officers are eligible for appointment to another specialty at the end of the original term of service when such vacancies occur.

Eccles and Patricroft Hospital (General Hospital—72 Beds)

SENIOR HOUSE OFFICER, now vacant.
HOUSE OFFICER, now vacant.

The work of the Hospital is mainly surgical and there is a busy Outpatient Department.

Salaries for House Officer posts £350–£450 p.a., according to experience. £100 p.a. deduction for residential accommodation and services. 6 months appointment. The Senior House Officer appointments will be for 12 months at a salary of £670 p.a., less £130 p.a. for residential accommodation and services.

Application forms from the Secretary, Park Hospital, Davyhulme, Manchester.

MAIDSTONE. KENT COUNTY OPHTHALMIC AND AURAL HOSPITAL. (113 Beds.) MID-KENT HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the appointment of SENIOR HOUSE OFFICER in the Ophthalmic Department of the above Hospital, post vacant March, 1952. The Hospital is recognised by the Examining Boards for the F.R.C.S. and the D.O. Appointment will be for 12 months. Salary £670 a year, less £150 a year for residential emoluments.

Applications should be forwarded as soon as possible to the Administrative Officer, Kent County Ophthalmic and Aural Hospital, Church-street, Maidstone.

MAIDSTONE. MID-KENT HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the appointment of RESIDENT ANÆSTHETIST for joint duties at the Kent County Ophthalmic and Aural Hospital and the West Kent General Hospital, Maidstone (total Beds 248), post now vacant. The salary will be £670 a year, with a deduction at the rate of £150 for residential emoluments. The post is recognised for the Diploma in Anæsthetics, and there will be excellent experience for this examination with Consultant Anæsthetists.

Applications should be forwarded to the Administrative Officer, West Kent General Hospital, Maidstone.

MAIDSTONE. WEST KENT GENERAL HOSPITAL. (135 Beds.) MID-KENT HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the appointment of either :—

(*a*) RECEIVING ROOM OFFICER, post now vacant. Salary £670 a year, with deduction of £150 a year for residential emoluments. Appointment for 12 months, or

(*b*) CASUALTY OFFICER, post now vacant. Salary at the rate of £350, £400, or £450 a year, according to experience. A deduction of £100 a year for residential emoluments.

Applications immediately to the Administrative Officer, West Kent General Hospital, Marsham-street, Maidstone.

MIDDLESBROUGH. WEST LANE ISOLATION HOSPITAL. (203 Beds.) Applications are invited for the post of SENIOR HOUSE OFFICER, which will become vacant 1st March, 1952. Salary £670 p.a., conditions of service being in accordance with the Ministry of Health Regulations.

Applications, with copies of 2 recent testimonials, should be forwarded to the Physician-Superintendent, West Lane Hospital, Middlesbrough, as early as possible.

NEWCASTLE REGIONAL HOSPITAL BOARD. Regional CHEST SURGERY CENTRE (160 Beds), SHOTLEY BRIDGE HOSPITAL and associated sanatoria. ANÆSTHETIST (whole-time), Senior Registrar, locum-tenens appointment, tenable up to 31st August, 1952. It is possible that a longer term Senior Registrar post will be available after 31st August, but this will be subject to open competition again. The great bulk of the work in the main centre—i.e., excluding the sanatoria—is concerned with non-tuberculous conditions (mediastinal, œsophageal, cardiovascular, as well as pulmonary). Candidates must possess a D.A., have had considerable experience with anæsthesia, and preferably have had a sound preliminary general medical and/or physiological training. Appointee must be prepared to take an active part in clinical and physiological investigations, pre-operative and post-operative management of patients in addition to undertaking the customary duties of an Anæsthetist. The allocation of these duties may have to be varied from time to time according to clinical requirements by arrangement with the Senior Anæsthetist, but usually the work will be divided between the Centre and the sanatoria. Appointment subject to National Health Service (Superannuation) Regulations, 1950.

Applications, giving details of qualifications, and experience, together with copies of 1–3 testimonials, and/or the names and addresses of 1–3 referees, should be sent to the Senior Administrative Medical Officer, Newcastle Regional Hospital Board, "Blythswood South," Osborne-road, Newcastle, 2, within 14 days. Candidates are entitled to visit the hospitals by arrangement with the Senior Surgeon, Regional Chest Surgery Centre, Shotley Bridge Hospital.

NEWCASTLE REGIONAL HOSPITAL BOARD. Regional THORACIC SURGICAL SERVICE. 2 REGISTRAR THORACIC SURGEONS (resident) required for duties at the Regional Centre (160 Beds) at Shotley Bridge General Hospital, where the work is almost entirely non-tuberculous (cardiovascular, œsophageal, and pulmonary), and at the associated sanatoria. The appointments are intended for trainees in thoracic surgery. Applicants should have completed their training in general surgery and desire to obtain basic experience in thoracic surgery before finally deciding to take up a career in thoracic surgery. A higher qualification is necessary, and some experience in chest surgery will be an advantage. Salary scale £775–£890 in accordance with the national conditions, and the appointments will be up to 31st August, 1952, in the first instance. Canvassing of members of the appointments committee will disqualify, but candidates are entitled to visit the unit by arrangement with the Senior Surgeon, Thoracic Unit, Shotley Bridge Hospital.

Applications, stating age, sex, nationality, qualifications, and experience, together with copies of 1–3 testimonials and/or the names and addresses of 1–3 referees, should be sent to the Senior Administrative Medical Officer, Newcastle Regional Hospital Board, "Blythswood South," Osborne-road, Newcastle upon Tyne, 2, within 21 days.

NEWCASTLE REGIONAL HOSPITAL BOARD. NEWCASTLE HOSPITAL MANAGEMENT COMMITTEE GROUP. REGISTRAR CHEST PHYSICIAN required at Walkergate Hospital, with duties in a chest clinic. The appointment which is temporary in the first instance up to 31st August, 1952, will be whole-time. Salary £775–£890. An unfurnished house will be available at the Hospital.

Applications, together with names and addresses of 1–3 referees and/or 1–3 testimonials, to be addressed to the Senior Administrative Medical Officer, "Blythswood South," Osborne-road, Newcastle upon Tyne, 2, within 14 days.

NEWCASTLE REGIONAL HOSPITAL BOARD. NORTHALLERTON HOSPITAL MANAGEMENT COMMITTEE GROUP. FRIARAGE HOSPITAL. (270 Beds.) ORTHOPÆDIC REGISTRAR (whole-time) required up to 31st August, 1952, in the first instance. Salary £775 p.a. A flat may be available.

Applications, together with names and addresses of 1–3 referees and/or 1–3 testimonials, should be sent to the Senior Administrative Medical Officer, "Blythswood South," Osborne-road, Newcastle upon Tyne, 2, within 14 days.

NEWCASTLE REGIONAL HOSPITAL BOARD. Durham HOSPITAL MANAGEMENT COMMITTEE GROUP. ORTHOPÆDIC REGISTRAR (whole-time) required for Durham County Hospital, &c., in the above Group. Salary £775–£890.

Applications, with names and addresses of 1–3 referees and/or 1–3 testimonials, to be addressed to the Senior Administrative Medical Officer, "Blythswood South," Osborne-road, Newcastle upon Tyne, 2, within 14 days.

NEWCASTLE. THE UNITED NEWCASTLE UPON TYNE HOSPITALS. Applications are invited from registered medical practitioners for the appointment of SENIOR HOUSE OFFICER to the Bacteriological Department of the Royal Victoria Infirmary. This is the teaching hospital of the University of Durham and the successful candidate will work under the supervision of the Clinical Bacteriologist and the duties will include those concerned with hospital blood-transfusion. The appointment, which is a non-resident one, is for 1 year and will be subject to Ministry of Health terms and conditions of service. The salary is at the rate of £670 p.a.

Applications, giving age, nationality, experience, and qualifications, with the names and addresses of 3 referees, should be sent to the undersigned within 2 weeks of the appearance of this advertisement.

A. W. SANDERSON, House Governor and Secretary.
Royal Victoria Infirmary, Newcastle upon Tyne.

NORTHALLERTON. FRIARAGE AND MATERNITY HOSPITALS. Applications are invited for the post of RESIDENT SENIOR HOUSE OFFICER in Obstetrics and Gynæcology for the above Hospitals. Previous experience in obstetrics is essential. The post will be vacant about mid-March, will be tenable for 6 months, and is subject to the terms and conditions of service for hospital medical staff.

Applications, with copies of testimonials or the names of 2 referees, should be addressed to the Secretary, Northallerton Hospital Management Committee, at the Friarage Hospital.

NUNEATON. MANOR HOSPITAL. (139 Beds.) Applications are invited for the post of HOUSE PHYSICIAN (32 general medical beds).

Applications to the Secretary, Group 20 Hospital Management Committee, Coventry and Warwickshire Hospital, Coventry.

NUNEATON. MANOR HOSPITAL. (139 Beds.) Senior HOUSE SURGEON to Fracture and Orthopædic Department (40 Beds) required. The Hospital treats all accident and orthopædic cases for an area with a population of 100,000 and is well equipped with ancillary services. Salary £670 p.a.

Applications to the Assistant Secretary.

NOTTINGHAM. CITY HOSPITAL. (833 Beds.) Required, HOUSE OFFICER (general surgery), post now vacant. Conditions of service in accordance with terms issued by Ministry of Health.

Applications, stating age, nationality, qualifications, and experience, together with copies of not more than 3 testimonials, to be sent immediately to the Administrative Officer, City Hospital, Hucknall-road, Nottingham.

NOTTINGHAM. CITY HOSPITAL. (833 Beds.) Required, SENIOR HOUSE OFFICER, to the Department of Thoracic Surgery, post vacant 1st April, 1952. Salary £670 p.a., less £130 p.a. for residential emoluments. The appointment will be for 1 year.

Applications, stating age, nationality, qualifications, and experience, together with copies of not more than 3 testimonials, to be submitted immediately to the Administrative Officer, City Hospital, Hucknall-road, Nottingham.

NOTTINGHAM GENERAL HOSPITAL. Applications are invited from registered medical practitioners for the post of ORTHOPÆDIC AND FRACTURE HOUSE SURGEON. The post offers exceptional experience in traumatic surgery. Duties to commence as soon as possible. Salary £350, £400, or £450 p.a., less £100 residential emoluments, according to experience. Appointment for 6 months in the first instance.

Applications, with copies of testimonials, should be sent as soon as possible to—

HENRY M. STANLEY, Secretary,
Nottingham No. 1 Hospital Management Committee.

NOTTINGHAM GENERAL HOSPITAL. Required, HOUSE SURGEON (resident), Male or Female, for the above Hospital, duties to commence as soon as possible. Salary and conditions of service in accordance with published regulations of the Ministry of Health. If held by a R practitioner the appointment will be for a period of 6 months.

Applications, stating age, qualifications, and experience, together with copies of testimonials, to be sent to—

HENRY M. STANLEY, Secretary,
Nottingham No. 1 Hospital Management Committee.

NOTTINGHAM GENERAL HOSPITAL. Applications are invited from registered medical practitioners for the post of SENIOR HOUSE OFFICER for the Casualty Department. Duties to commence as soon as possible. Salary £670 p.a., less £150 emoluments. Terms and conditions of service as laid down by Ministry Regulations.

Applications, stating age, qualifications, and experience, together with copies of testimonials, to be sent to—

HENRY M. STANLEY, Secretary.
General Hospital, Nottingham.

NOTTINGHAM. HIGHBURY HOSPITAL, Bulwell. Required SENIOR HOUSE OFFICER (surgical) for the above Hospital. Good opportunity for obtaining experience in all types of general surgery. Duties to commence early in March. Salary £670 p.a. and conditions of service in accordance with the published conditions of the Ministry of Health.

Applications, stating age, qualifications, and experience, together with copies of testimonials, to be sent to—

HENRY M. STANLEY, Secretary,
Nottingham No. 1 Hospital Management Committee.

NEWARK HOSPITAL, London-road, Newark, Notts. (81 Beds.) NOTTINGHAM NO. 1 HOSPITAL MANAGEMENT COMMITTEE. 2 HOUSE OFFICERS (first or subsequent posts) for the care of both medical and surgical cases. Appointments for 6 months. Duties to commence immediately.

Applications, stating age, qualifications, &c., and enclosing copies of recent testimonials, should be sent to the Assistant Secretary, Newark Hospital, London-road, Newark, Notts.

NEWMARKET GENERAL HOSPITAL, Suffolk. (268 Beds.) Applications are invited for the post of HOUSE SURGEON (vacant immediately) in a busy general hospital staffed by Consultants. Offers excellent opportunity for experience in general, E.N.T., and eye surgery. Salary in accordance with national scale, with usual deduction for board and residence.

Full particulars of age, qualifications, and experience, should be forwarded to the Physician-Superintendent.

NEWMARKET GENERAL HOSPITAL, Suffolk. (268 Beds.) Applications are invited for the resident post of SENIOR HOUSE OFFICER (surgical), duties to commence immediately, in a busy Hospital staffed by Consultants. Appointment offers opportunity for experience in obstetrics and gynæcology in addition to general surgery. Salary £670 p.a., conditions of service in accordance with Ministry of Health regulations.

Applications, stating age, qualifications, and experience, together with copies of testimonials, to be sent to Physician-Superintendent.

PERTH, SCOTLAND. MURRAY ROYAL HOSPITAL. Temporary JUNIOR HOSPITAL MEDICAL OFFICER required. Salary in accordance with recognised scale.

Applications, stating age, sex, nationality, qualifications, experience, and present appointment, together with names of 3 referees, should be forwarded immediately to—

D. W. STRUDLEY, Secretary and Treasurer,
Board of Management—Perthshire Mental Hospitals.

OXFORD. UNITED OXFORD HOSPITALS. Applications are invited for the whole-time post of REGISTRAR in Diagnostic Radiology. The appointment will be for 1 year and eligible for extension to a second year.

Applications on forms obtainable from the Secretary, Registrar Committee, 43, Banbury-road, Oxford, should reach him by 1st March.

OXFORD. THE UNITED OXFORD HOSPITALS. Applications are invited for the post of SENIOR HOUSE OFFICER to the Thoracic Surgical Unit at the Churchill Hospital, for 6 months, commencing 1st March.

Applications, stating age, qualifications, and experience, together with the names of 2 referees, should be sent as soon as possible to the Administrator, Radcliffe Infirmary, Oxford.

OXFORD. THE UNITED OXFORD HOSPITALS. Applications are invited for the post of Locum RADIOLOGIST of Registrar status in the X-ray Department at the Radcliffe Infirmary on a salary of £775 p.a. for a period of 12 months or more.

Applications, stating age, qualifications, and experience, together with names of 3 referees, should be addressed within 30 days of the publication of this advertisement to the Administrator, Radcliffe Infirmary, from whom further particulars may be obtained.

OXFORD. THE UNITED OXFORD HOSPITALS. Applications are invited for the post of SENIOR HOUSE OFFICER in the X-ray Department at the Radcliffe Infirmary.

Applications, stating age, qualifications, and experience, together with names of 3 referees, should be addressed within 15 days of the publication of this advertisement to the Administrator, Radcliffe Infirmary, from whom further particulars may be obtained.

OXFORD REGIONAL HOSPITAL BOARD. Applications are invited for the following whole-time posts which will be held for 1 year and be eligible for extension to a second year :—

REGISTRAR in Ophthalmology to the hospitals and clinics of the Aylesbury—High Wycombe area.

REGISTRAR in General Surgery to the hospitals of Aylesbury Hospital Management Committee with duties mostly at Stoke Mandeville Hospital.

Applications for each post on forms obtainable from the Secretary, Registrar Committee, 43, Banbury-road, Oxford, should reach him by 1st March.

PENZANCE. WEST CORNWALL HOSPITAL. (General Hospital)—100 Beds.) WEST CORNWALL HOSPITAL MANAGEMENT COMMITTEE. Applications are invited from registered medical practitioners for the appointment of HOUSE PHYSICIAN (Male), which falls vacant on 6th March, 1952. Salary at the rate of £350 or £400 p.a. from which a deduction at the rate of £100 p.a. will be made for board-residence, &c.

Applications, stating age, qualifications with dates, nationality, and present post, and accompanied by copies of 3 recent testimonials, should be forwarded to the Administrative Assistant, West Cornwall Hospital, Penzance.

PENZANCE. WEST CORNWALL HOSPITAL. (General Hospital—100 Beds.) WEST CORNWALL HOSPITAL MANAGEMENT COMMITTEE. Applications are invited from registered medical practitioners for the post of CASUALTY HOUSE SURGEON, now vacant. Salary and conditions of service in accordance with the terms laid down by the Ministry of Health.

Applications, stating age, nationality, qualifications, and experience, and enclosing copies of 2 recent testimonials, should be forwarded to the Administrative Assistant, West Cornwall Hospital, Penzance.

PENZANCE. WEST CORNWALL HOSPITAL. (General Hospital—100 Beds.) WEST CORNWALL HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the appointment of HOUSE SURGEON (Male or Female), post vacant 7th April, 1952. National salary and conditions of service.

Applications, stating age, nationality, qualifications, and experience, together with copies of 2 recent testimonials, should be forwarded to the Administrative Assistant, West Cornwall Hospital, Penzance.

PONTYPRIDD (near). EAST GLAMORGAN HOSPITAL, CHURCH VILLAGE, near PONTYPRIDD. (316 Beds—Committee's base hospital serving population of 177,000.) PONTYPRIDD AND RHONDDA HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of HOUSE OFFICER (first or second post), surgical.

Applications, stating age, qualifications, and experience, together with copies of 2 recent testimonials, to be sent as soon as possible to the Secretary of the Pontypridd and Rhondda Hospital Management Committee, Courthouse-street, Pontypridd.

PONTEFRACT AND CASTLEFORD HOSPITAL MANAGEMENT COMMITTEE, YORKS.

Castleford, Normanton and District Hospital, Castleford

HOUSE SURGEON required (first or second post). Salary £350 or £400. Excellent experience at this Hospital in orthopædic and general surgery. Applications to the Secretary.

SENIOR HOUSEMAN (anæsthetics), resident or non-resident, required, graded as Senior House Officer. Salary £670 p.a. Duties at hospitals in the group as required. Applications to the Secretary.

Warde-Aldam Hospital, South Elmsall

HOUSE SURGEON required (first or second post). Salary £350 or £400. Applications to the Secretary.

W. BOWRING, Secretary.

Great Northern House, Salter-row, Pontefract.

PLYMOUTH. SOUTH DEVON AND EAST CORNWALL HOSPITAL. DEPARTMENT OF OBSTETRICS AND GYNÆCOLOGY. Applications are invited from duly qualified and registered medical practitioners for the appointment of RESIDENT OBSTETRICAL OFFICER of Senior House Officer grade, vacant 1st April, 1952. There will be additional duties at the Flete Maternity Home and the Alexandra Maternity Home, which are parts of the Department. Candidates should have had considerable experience in a Department of Obstetrics and Gynæcology. The appointment will be for a period of 12 months and is renewable. Salary £670 p.a. Terms and conditions are in accordance with the National Health Service terms. The post is recognised by the Royal College of Obstetricians and Gynæcologists for the membership examination of the College.

Applications, stating age, nationality, qualifications, and experience, together with the names and addresses of 3 referees, should be sent to—

ARTHUR R. CASH, Secretary, Plymouth,
South Devon and East Cornwall General Hospital Group.
Head Office, 7, Nelson-gardens, Devonport.

PLYMOUTH, SOUTH DEVON AND EAST CORNWALL GENERAL HOSPITAL GROUP. Applications are invited from registered medical practitioners for the appointments of :—

(1) HOUSE SURGEON, Freedom Fields Section, vacant 4th April, 1952, recognised for the Fellowship of the Royal College of Surgeons.

(2) RESIDENT ANÆSTHETIST, Greenbank Road Section, vacant 17th March, 1952.

(3) DENTAL HOUSE SURGEON, Greenbank Road Section, vacant 27th April, 1952. This post is recognised by the Royal College of Surgeons as fulfilling the requirements of candidates for the Fellowship of Dental Surgery.

The appointments will be for a period of 6 months. Salary and conditions of service in accordance with the National Health Service terms.

Applications, stating age, nationality, qualifications, and experience, together with 3 recent testimonials, to—

ARTHUR R. CASH, Secretary.
7, Nelson-gardens, Devonport.

PLYMOUTH MOUNT GOLD ORTHOPÆDIC HOSPITAL. Applications are invited for the appointment of 2 SENIOR HOUSE OFFICERS at the above Hospital (120 Beds). The appointments are resident and the salaries and conditions of service are in accordance with the National Health Service terms. Some experience in orthopædics is desirable.

Applications, stating age, nationality, qualifications, and experience, with copies of 2 recent testimonials, should be sent to the Secretary, Plymouth Special Hospital Management Committee, 8, Nelson-gardens, Stoke, Plymouth.

PORTSMOUTH GROUP HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the following appointments :—

Saint Mary's Hospital (773 Beds)
HOUSE SURGEON.

Queen Alexandra Hospital (464 Beds)
HOUSE PHYSICIAN.
SENIOR HOUSE SURGEON.
HOUSE SURGEON.

Royal Portsmouth Hospital (213 Beds)
ORTHOPÆDIC HOUSE SURGEON.

Applications, stating age, experience, and qualifications, and names of 2 referees, should be submitted as soon as possible to E. H. HURST,
35, Grove-road South, Southsea.

PRESTON ROYAL INFIRMARY. Applications are invited for the following posts :—

RESIDENT SENIOR HOUSE OFFICERS.
(*a*) Anæsthetics—recognised for D.A.
(*b*) Pathological.
HOUSE OFFICERS for special departments—viz., Surgical Medical, Casualty, Orthopædics, Ophthalmic, Urological.

Please apply to Secretary, Preston and Chorley Hospital Management Committee, Royal Infirmary, Preston.

JOHN GIBSON, Secretary.

REDRUTH. CAMBORNE-REDRUTH HOSPITAL. (159 Beds—4 Residents.) WEST CORNWALL HOSPITAL MANAGEMENT COMMITTEE. SENIOR HOUSE OFFICER (surgical) required for the above Hospital. Duties to commence on 1st March, 1952. Salary £670 p.a., less £100 p.a. for residential emoluments.

Applications, stating age, experience, and nationality, together with names of 2 persons to whom reference can be made, should be submitted to the Administrative Assistant.

RHONDDA. PORTH AND DISTRICT HOSPITAL. (110 Beds—this Hospital is visited regularly by Consultants from the Cardiff Royal Infirmary.) PONTYPRIDD AND RHONDDA HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of HOUSE OFFICER (first or second post), duties mainly surgical.

Applications, stating age, qualifications, experience, together with copies of 2 recent testimonials, to be sent as soon as possible to the Secretary, Pontypridd and Rhondda Hospital Management Committee, Courthouse-street, Pontypridd.

ROCHDALE AND DISTRICT HOSPITAL MANAGEMENT COMMITTEE.

Birch Hill Hospital
HOUSE SURGEON.

Rochdale Infirmary
HOUSE PHYSICIAN.

Apply to the Secretary, Central Offices, Birch Hill Hospital, Rochdale, Lancs.

ROMFORD, ESSEX. RUSH GREEN HOSPITAL. (247 Beds.) Applications are invited from registered medical practitioners for the post of RESIDENT HOUSE SURGEON (Woman) for duties in the Gynæcological Unit comprising 25 gynæcological and 6 maternity beds at the above Hospital. Previous experience not necessary. Post tenable for 6 months from 1st February, 1952.

Applications, stating (in order) age, qualifications with dates, present appointment and details of experience, accompanied by copies of 2 recent testimonials or names of referees, should be sent immediately to the Secretary, Romford Group Hospital Management Committee, Oldchurch Hospital, Romford. Applicants may see the Hospital by arrangement with the Medical Superintendent (Telephone : Romford 7711).

ROMFORD, ESSEX. OLDCHURCH HOSPITAL. (718 Beds.) Applications are invited from registered medical practitioners for the post of ORTHOPÆDIC HOUSE SURGEON (resident) in the Orthopædic and Accident Unit. The service consists of 100 Beds equally divided between traumatic surgery and "cold" orthopædics. 6 months post.

Applications, stating age, nationality, qualifications with dates, present appointment and experience, and 2 recent testimonials or names of 2 referees, should be forwarded immediately to the Secretary, Romford Group Hospital Management Committee, Oldchurch Hospital, Romford.

ROMFORD, ESSEX. OLDCHURCH HOSPITAL. (718 Beds.) Applications are invited from registered medical practitioners for the appointment of HOUSE PHYSICIAN in the Neurosurgical Unit. Tenable for 6 months. This post would be suitable for candidate seeking a higher qualification as it offers excellent experience in neurology.

Applications, stating age, nationality, qualifications with dates, and experience, together with copies of 3 recent testimonials or names of 2 referees, should be sent immediately to the Secretary, Romford Group Hospital Management Committee, Oldchurch Hospital, Romford.

SHEFFIELD. CITY GENERAL HOSPITAL. (Recognised for F.R.C.S., England.) Applications are invited for the resident post of SENIOR HOUSE OFFICER in the Casualty Department, vacant April, 1952. Facilities also for experience in Orthopædic Department if desired.

Applications, giving full details of age, nationality, qualifications, present and previous appointments with dates, and the names of 2 persons to whom reference may be made, should be forwarded to the undersigned at Nether Edge Hospital, Sheffield, 11. W. STANSFIELD, Secretary.

RHYL. ROYAL ALEXANDRA GENERAL HOSPITAL. (107 Beds.) Applications are invited for the appointment of a RESIDENT MEDICAL OFFICER at the above Hospital. The appointment is of Senior House Officer grade at a salary of £670 p.a., with a deduction for full residential emoluments and will, in the first instance, be tenable for 12 months. The successful applicant will be required to carry out duties under the supervision of the Consultant Physician.

Applications, stating age, and giving details of qualifications, present and previous appointments, with copies of 3 testimonials, to be sent to the undersigned with 14 days of the date of publication of this advertisement.

WILLIAM ROBERTS, Secretary,
Clwyd and Deeside Hospital Management Committee.
"Rhainfa," Russell-road, Rhyl.

SHEFFIELD. CITY GENERAL HOSPITAL. (Recognised for F.R.C.S. England.) Applications are invited for the resident appointment of HOUSE SURGEON (general surgery) and certain extra duties, vacant 1st April, 1952.

Applications, giving full details of age, nationality, qualifications, present and previous appointments with dates, and the names of 2 persons for reference should be forwarded to the undersigned at Nether Edge Hospital, Sheffield, 11.

W. STANSFIELD, Secretary. ●

SHEFFIELD. THE UNITED SHEFFIELD HOSPITALS. THE CHILDREN'S HOSPITAL UNIT. Applications are invited from registered practitioners for the post of RESIDENT PATHOLOGIST (Senior House Officer status), to commence on 17th April. Salary according to National Health Service scale.

Applications in writing, with copies of 3 recent testimonials, to reach the Superintendent, The Children's Hospital, Western Bank, Sheffield, by 1st March.

SHEFFIELD REGIONAL HOSPITAL BOARD. Applications are invited for the appointment of Whole-time ASSISTANT MEDICAL OFFICER (Junior Hospital Medical Officer grade) at the Regional Blood Transfusion Centre, Northfield-road, Sheffield. Applicants should have had previous clinical experience. The appointment affords scope in all aspects of blood-transfusion work and serology, including research.

Applications, stating present appointment, date of birth, qualifications, and experience, and the names of 3 referees, should be sent to the Secretary, Regional Hospital Board, Fulwood House, Old Fulwood-road, Sheffield, 10, not later than 15th March, 1952. Applicants may visit the Blood Transfusion Centre by arrangement with the Director.

SHEFFIELD REGIONAL HOSPITAL BOARD. Applications are invited from registered medical practitioners for the resident whole-time post of REGISTRAR (chest diseases) for duties at Oakwood Hall Sanatorium (100 Beds) and the Chest Clinic, Chatham Villas, Chatham-street, Rotherham. The appointment is for 1 year in the first instance and may be renewed for a further year.

Applications, giving age, nationality, qualifications, present and previous appointments with dates, together with names and addresses of 3 referees, should be sent to the Secretary, Sheffield Regional Hospital Board, Fulwood House, Old Fulwood-road, Sheffield, 10, to arrive not later than 6th March, 1952.

SCOTLAND. WESTERN REGIONAL HOSPITAL BOARD. Applications are invited from suitably qualified medical practitioners for the appointment of SENIOR HOUSE OFFICER in Psychiatry at Stobhill Hospital, Glasgow, which will be for 1 year in the first instance. The above appointment will be subject to the National Health Service (Scotland) superannuation regulations.

Applications, stating age, qualifications, and experience, and present appointment, and giving the names of 3 referees, should be submitted not later than 28th February, 1952, to the Secretary, Board of Management for Glasgow Northern Hospitals, 13, Woodside-place, Glasgow, C.3.

SCUNTHORPE AND DISTRICT WAR MEMORIAL HOSPITAL. SHEFFIELD REGIONAL HOSPITAL BOARD. Applications are invited from registered medical practitioners for the whole-time post of REGISTRAR (orthopædics) to the above Hospital (269 Beds). The appointment is for 1 year in the first instance and may be renewed for a further year.

Applications, giving age, nationality, qualifications, present and previous appointments with dates, together with names and addresses of 3 referees, should be sent to the Secretary, Sheffield Regional Hospital Board, Fulwood House, Old Fulwood-road, Sheffield, 10, to arrive not later than 25th February, 1952.

STOKE-ON-TRENT HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the following posts in the Group hospitals :—

North Staffs Royal Infirmary (475 Beds)
SENIOR HOUSE OFFICER (orthopædics), vacant now. Recognised for F.R.C.S.
HOUSE OFFICER (surgical), vacant 1st March. Recognised for F.R.C.S.

Haywood Hospital (96 Beds)
SENIOR HOUSE OFFICER (surgical), vacant now.
HOUSE OFFICER (surgical), vacant mid-March.
HOUSE OFFICER (medical), vacant mid-March.

Longton Hospital (55 Beds)
SENIOR HOUSE OFFICER (surgical), vacant now.

City General Hospital (964 Beds)
HOUSE OFFICER (surgical), vacant now. Recognised for F.R.C.S.

Applications, stating age, nationality, and experience, together with copy testimonials, should be forwarded to the Secretary, Hospital Management Committee, Princes-road, Stoke-on-Trent, as soon as possible. THORNBURROW GIBSON, Secretary.

ST. LEONARDS-ON-SEA. BUCHANAN HOSPITAL. (94 Beds.) HASTINGS GROUP HOSPITAL MANAGEMENT COMMITTEE. HOUSE SURGEON (resident) required at above Hospital, vacant 1st April, 1952. Post is recognised for the M.R.C.O.G. National scale of salary.

Applications to Administrator at the Hospital.

SHREWSBURY. ROYAL SALOP INFIRMARY. (240 Beds.) Applications are invited from registered medical practitioners (Male or Female) for the appointment of RESIDENT HOUSE SURGEON (second or third post) to a General Consulting Surgeon. The post is vacant immediately and tenable in the first instance for a period of 6 months.

Applications, stating age, qualifications, nationality, and experience, accompanied by copy testimonials, should be sent to— J. P. MALLETT, Secretary,

Shrewsbury Group 15 Hospital Management Committee.
Royal Salop Infirmary, Shrewsbury, 2nd November, 1951.

SHREWSBURY. ROYAL SALOP INFIRMARY. (240 Beds.) Applications are invited from registered medical practitioners (Male or Female) for the appointment of a CASUALTY OFFICER (resident or non-resident), of Senior House Officer status, duties to be from 9 A.M.–5 P.M. each day, except Saturday, which should be 9 A.M.–1 P.M., and the applicant may be required to do 1 weekend's duty in each month.

Applications, stating age, qualifications, nationality, and experience, accompanied by copy testimonials, should be sent to— J. P. MALLETT, Secretary,

Shrewsbury Group 15 Hospital Management Committee.
Royal Salop Infirmary, Shrewsbury, 11th January, 1952.

SHREWSBURY (near). CROSS HOUSES HOSPITAL. (183 Beds.) Applications are invited from registered medical practitioners for the appointment of RESIDENT MEDICAL OFFICER, vacant immediately. Preference will be given to those applicants with previous obstetrical experience. Salary £350–£450 p.a., less £100 p.a. in respect of residential emoluments.

Applications, stating age, qualifications, nationality, and experience, accompanied by copy testimonials, should be sent to— J. P. MALLETT, Secretary,

Shrewsbury Group 15 Hospital Management Committee.
Royal Salop Infirmary, Shrewsbury.

SOUTHAMPTON GENERAL HOSPITAL. (453 Beds.) HOUSE SURGEON (resident) to General Surgical Unit, required early March. Post tenable for 6 months.

Applications, with copies of testimonials, to be forwarded as soon as possible to the Secretary, Southampton Group Hospital Management Committee, Bullar-street, Southampton.

SOUTHAMPTON. ROYAL SOUTH HANTS HOSPITAL. (280 Beds.) 2 SENIOR HOUSE OFFICERS (orthopædic). Casualty Officers, required immediately for the above Hospital (Orthopædic Unit 74 Beds). This Hospital is the centre to which all trauma from a large industrial town and port is directed, thus providing excellent experience in the treatment of traumatic conditions.

Applications, with copies of testimonials, to be submitted as soon as possible to the Secretary, Southampton Group Hospital Management Committee, Bullar-street, Southampton.

SOUTHAMPTON. ROYAL SOUTH HANTS HOSPITAL (280 Beds) and SOUTHAMPTON GENERAL HOSPITAL (453 Beds). Applications are invited for the whole-time post of SENIOR HOUSE OFFICER (E.N.T.) becoming vacant 27th March. The post is recognised for the F.R.C.S. (Eng.) and D.L.O. examinations, providing experience in all branches of E.N.T. work, including audiometry. The group includes a diagnostic and distributing Hearing-aid Centre. Occasional work at other hospitals may be required.

Applications, with copies of 3 recent testimonials, should be forwarded as soon as possible to the Secretary, Southampton Group Hospital Management Committee, Bullar-street, Southampton.

ST. ALBANS CITY HOSPITAL. (425 Beds.) Locum REGISTRAR required from 4th March, 1952, for an indefinite period for duties mainly at Osterhills Unit for gynæcological and obstetric work. Hospital recognised for the D.Obst. R.C.O.G.

Applications, giving full particulars of age, qualifications, and experience, together with the names of 2 referees, to be forwarded to the Secretary, Mid Herts Group Hospital Management Committee, Osterhills, Normandy-road, St. Albans.

ST. ALBANS CITY HOSPITAL, St. Albans. House PHYSICIAN required to 1 of the medical teams, for duties mainly in the acute medical wards, but the successful candidate would also have some work with the Consultant Physician in the tuberculosis wards. Post vacant middle of March, 1952.

Applications, giving age, qualifications, and experience, to be forwarded to the Secretary, Osterhills, Normandy-road, St. Albans, as soon as possible.

ST. ALBANS CITY HOSPITAL. (425 Beds.) Junior HOSPITAL MEDICAL OFFICER required 1st April, 1952, for duties mainly at Osterhills Unit for gynæcological and obstetric work. Hospital recognised for the D.Obst. R.C.O.G.

Applications, giving full particulars of age, qualifications, and experience, to be forwarded to the Secretary, Mid Herts Group Hospital Management Committee, Osterhills, Normandy-road, St. Albans.

TAPLOW, near MAIDENHEAD, BERKS. CANADIAN RED CROSS MEMORIAL HOSPITAL. HOUSE PHYSICIAN to the special unit for research in juvenile rheumatism required. The post offers scope for those interested in research, paediatrics, rheumatology, or cardiology, and previous experience in one of these is desirable. Salary on national scale.

Applications, stating age, qualifications with dates, and experience, together with copies of 2 testimonials, should be sent to the Administrative Officer.

STAFFORD. STAFFORDSHIRE GENERAL INFIRMARY. (159 Beds—with Recovery Unit 32 Beds.) STAFFORD HOSPITAL MANAGEMENT COMMITTEE. Applications are invited from registered medical practitioners (Male or Female) for the post of HOUSE SURGEON (first, second, or third post), vacant 15th March, 1952.

Applications, giving particulars as to age, qualifications, and experience, together with copies of 3 recent testimonials, should be forwarded to the undersigned immediately.

H. H. JONES, Secretary to the Committee
13, Foregate-street, Stafford.

STAFFORD. STAFFORDSHIRE GENERAL INFIRMARY. (159 Beds—with Recovery Unit 32 Beds.) STAFFORD HOSPITAL MANAGEMENT COMMITTEE. Applications are invited from registered medical practitioners (Male or Female) for the post of HOUSE PHYSICIAN (first, second, or third post), vacant 1st March, 1952.

Applications, giving particulars as to age, qualifications, and experience, together with copies of 3 recent testimonials, should be forwarded to the undersigned immediately.

H. H. JONES, Secretary to the Committee.

13, Foregate-street, Stafford.

SWANSEA. MORRISTON HOSPITAL. (450 Beds.) Applications are invited from registered medical practitioners for the resident appointment of SENIOR HOUSE OFFICER in the Neurological and Neurosurgical Department. Salary and conditions of service will be according to the National Health Service scale.

Applications, stating age, qualifications, and experience, should be addressed to the Medical Superintendent, Morriston Hospital, Swansea. O. C. HOWELLS, Secretary,

Glantawe Hospital Management Committee.

TILBURY AND RIVERSIDE GENERAL HOSPITAL. TILBURY BRANCH. Applications are invited from registered medical practitioners for the appointment of HOUSE PHYSICIAN (resident) at the above Hospital. The appointment will be for 6 months in the first instance, and the post becomes vacant on 29th February, 1952.

Applications, together with copies of not more than 3 recent testimonials, should be forwarded to the undersigned as soon as possible. G. E. WHYTE, Secretary,

South East Essex Hospital Management Committee.

Thurrock Hospital, Grays, Essex.

TILBURY AND RIVERSIDE GENERAL HOSPITAL. TILBURY BRANCH. Applications are invited from registered medical practitioners for the post of HOUSE SURGEON (resident) at the above Hospital. The appointment will be for 6 months in the first instance and the post becomes vacant on 15th March, 1952.

Applications, together with copies of not more than 3 recent testimonials, should be forwarded to the undersigned as soon as possible. G. E. WHYTE, Secretary,

South East Essex Hospital Management Committee.

Thurrock Hospital, Grays, Essex.

TRURO. ROYAL CORNWALL INFIRMARY. (General Hospital—212 Beds, 8 Residents.) WEST CORNWALL HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for HOUSE SURGEON (Male or Female) for General Surgery and Gynæcology, post vacant 18th March, 1952. The successful candidate will be responsible jointly with the House Surgeon for the 66 Beds allocated to the 2 specialties. Salary and conditions of service in accordance with the terms laid down by the Ministry of Health.

Applications, stating age, qualifications, and experience, and enclosing copies of 2 recent testimonials, should be sent to the Administrative Assistant, Royal Cornwall Infirmary, Truro.

TRURO. ROYAL CORNWALL INFIRMARY. (General Hospital—212 Beds, 8 Residents.) WEST CORNWALL HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the vacancy of RESIDENT SENIOR HOUSE OFFICER to the Orthopædic and Traumatic Department, which occurs on 7th February, 1952. This is a large and busy specialty with 2 Consultants, 64 Beds and deals with the greater part of the casualties in West Cornwall. The post is tenable for 1 year at a salary of £670, less £100 for emoluments, and subject to the regulations of the Ministry of Health.

Applications, stating age, nationality, qualifications, and experience, and accompanied by copies of 2 recent testimonials, should be forwarded to the Administrative Assistant without delay.

VENTNOR. ROYAL NATIONAL HOSPITAL FOR DISEASES OF THE CHEST, ISLE OF WIGHT. (249 Beds.) JUNIOR HOSPITAL MEDICAL OFFICER (resident), unmarried. Hospital has all facilities for major thoracic surgery.

Applications, with names of 2 referees, should be sent to Physician-Superintendent.

WARRINGTON GENERAL HOSPITAL (372 Beds) and WARRINGTON INFIRMARY (172 Beds). WARRINGTON AND DISTRICT HOSPITAL MANAGEMENT COMMITTEE. A RESIDENT SENIOR HOUSE OFFICER for anæsthetic work is required for duties at the above Hospitals. The person appointed will be resident at the General Hospital. The commencing salary is £670 p.a., less £130 for full residential emoluments.

Applications, stating age, experience, and qualifications, should be sent immediately to—

H. L. BOOT, Secretary to the Committee.

c/o General Hospital, Warrington, Lancs.

WATFORD AND DISTRICT PEACE MEMORIAL HOS-PITAL, WATFORD, HERTS. (189 Beds.) Applications are invited for the post of CASUALTY OFFICER AND ORTHOPÆDIC HOUSE SURGEON. The traumatic and Orthopædic Department consists of 24 Beds and is integrated with the Royal National Orthopædic Hospital. Salary according to National Health Service scale.

Applications, stating age, qualifications, and experience, together with copies of 2 recent testimonials, should be sent to—

CYRIL HOPKINSON, Administrator.

WEST BROMWICH AND DISTRICT GENERAL HOS-PITAL, Edward-street, WEST BROMWICH. Applications are invited for the post of HOUSE SURGEON (first or subsequent post). Range of salary £350–£450 p.a., according to experience, with deduction of £100 p.a. in respect of board and lodging. The post is tenable for 6 months.

Applications, together with 3 recent testimonials, should be submitted to—

JOHN O. ROBINS, Secretary, West Bromwich and District Hospitals Management Committee Group No. 18.

WAKEFIELD. PINDERFIELDS GENERAL HOSPITAL. Applications are invited for the appointment of JUNIOR HOSPITAL MEDICAL OFFICER to General Medical Unit (70 Beds). Salary scale £700–£50–£1000 p.a., less a charge at the rate of £130 p.a. if resident.

Address applications, with full particulars of qualifications, &c., and the names and addresses of 2 persons for reference, to—

G. L. BANNER, Secretary.

Victoria Chambers, Wood-street, Wakefield.

WARWICK (near). KING EDWARD VII MEMORIAL SANATORIUM, Hertford-hill, near WARWICK. (239 Beds—Tuberculosis.) SOUTH WARWICKSHIRE HOSPITAL GROUP (NO. 14). Applications are invited for the appointment of a JUNIOR HOSPITAL MEDICAL OFFICER at the King Edward VII Memorial Sanatorium. The post may be resident or non-resident. The Sanatorium is a modern one with a total of 239 Beds for the treatment of pulmonary tuberculosis, and plans are being made for the opening of a Thoracic Surgery Unit of about 50 Beds. Salary and conditions of service in accordance with the terms and conditions of service of hospital medical and dental staffs (England and Wales); less the appropriate charge if resident.

Applications, stating age, qualifications, and details of experience, together with the names and addresses of 3 referees, should be forwarded to the Medical Superintendent as soon as possible.

WESTCLIFF HOSPITAL, Balmoral-road, Westcliff-on-SEA. Applications are invited for the position of RESIDENT HOUSE MEDICAL OFFICER (House Officer grade) at the Westcliff Hospital, post now vacant. The Hospital deals with communicable diseases in its widest sense—e.g., common exanthemata, primary pneumonias, infections of the nervous system, tuberculosis, infective hepatitis, gastro-enteritis, &c. In addition there is a ward for general medical cases. The appointment covers a wide field of medicine, including paediatrics and offers excellent training for general practice. An additional £50 p.a. above the standard salaries laid down may be paid.

Applications, &c., to be sent to the Secretary at the above hospital as soon as possible.

J. C. FIELD, Secretary,

Southend-on-Sea Hospital Management Committee.

WESTON-SUPER-MARE GENERAL HOSPITAL. (110 Beds.) Applications are invited from registered medical practitioners for the resident appointments of 2 HOUSE OFFICERS (first or second posts), House Surgeons, duties to commence as soon as possible. Salary at the rate of £350–£400 p.a., according to previous posts held, less £100 in respect of residential emoluments.

Applications, stating age, qualifications, and experience, together with names and addresses of 2 referees, should be addressed to the Secretary, Weston-super-Mare Hospital Management Committee, c/o The General Hospital, Weston-super-Mare.

WHISTON. COUNTY HOSPITAL. (882 Beds.) Applications are invited for the appointment of RESIDENT HOUSE PHYSICIAN, 6 months appointment. Salary £350–£450 p.a., according to experience, less £100 p.a. for residential emoluments.

Applications, stating age, qualifications and experience, and giving 2 names for reference, should be forwarded to the undersigned as soon as possible.

N. RICHARDS, Secretary,

St. Helens and District Hospital Management Committee.

Group Office, County Hospital, Whiston, near Prescot, Lancs.

WIGAN. ROYAL ALBERT EDWARD INFIRMARY. HOUSE SURGEON (Male or Female) required at the above Hospital. Post, which is House Officer grade and is recognised for F.R.C.S. examinations, falls vacant on 21st March, 1952.

Applications, stating age, qualifications, &c., together with the names of 2 referees, should be received by the undersigned as early as possible. T. W. HURST, Secretary,

Wigan and Leigh Hospital Management Committee.

Knowsley House, Wigan.

WIGAN. ROYAL ALBERT EDWARD INFIRMARY. CASUALTY OFFICER (Male or Female) required at the above Hospital, post vacant 3rd March, 1952. House Officer grade post recognised for the F.R.C.S. examinations.

Applications, stating age, qualifications, &c., together with the names of 2 referees, should be received by the undersigned as early as possible. T. W. HURST, Secretary,

Wigan and Leigh Hospital Management Committee.

Knowsley House, Wigan.

WIGAN AND LEIGH HOSPITAL MANAGEMENT COMMITTEE.

Royal Albert Edward Infirmary, Wigan (Acute General Hospital—200 Beds)

HOUSE PHYSICIAN required, resident (House Officer grade).

Leigh Infirmary, Leigh, Lancs. (Acute General Hospital —102 Beds)

SENIOR HOUSE SURGEON required (Senior House Officer grade). The person appointed will be attached to the Surgical and Orthopædic Wards, and will be required to undertake some duties in the Casualty Department along with other members of the resident staff.

Applications for the above posts, stating age, qualifications, and details of previous hospital appointments, should be forwarded to the undersigned as soon as possible, together with the names of 2 referees.

Knowsley House, Wigan. T. W. HURST, Secretary.

WINCHESTER. ROYAL HAMPSHIRE COUNTY HOS-PITAL. (311 Beds.)

HOUSE OFFICER (anæsthetics) required, vacant 2nd April, 1952. The Hospital is recognised for the D.A.

HOUSE SURGEONS (2), vacant 16th and 29th March, respectively. General surgery and work in E.N.T. Department.

Applications, with copies of 2 testimonials, to Secretary.

WREXHAM. WAR MEMORIAL HOSPITAL. (170 Beds.) WREXHAM, POWYS AND MAWDDACH HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the appointment of HOUSE PHYSICIAN at the above Hospital. The appointment will be for 6 months and will commence at the beginning of March, 1952. Salary will be at the rate of £350–£450 p.a., according to experience, less £100 p.a. for full residential accommodation.

Applications, stating age, nationality, qualifications, and experience, with copies of 2 recent testimonials, to be addressed to the Secretary, Wrexham, Powys and Mawddach Hospital Management Committee, Maelor General Hospital, Wrexham.

WREXHAM. MAELOR GENERAL HOSPITAL. (513 Beds.) WREXHAM, POWYS AND MAWDDACH HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of HOUSE SURGEON at the above Hospital to commence at the beginning of March. The appointment is recognised for the Diploma of F.R.C.S. (Eng. and Edin.). Salary will be at the rate of £350, £400, or £450 p.a., according to experience, less £100 p.a. for full residential emoluments.

Applications, stating age, nationality, qualifications, and experience, together with copies of 2 recent testimonials, should be addressed to—

WILLIAM JONES, Secretary, Wrexham
Powys and Mawddach Hospital Management Committee.
Maelor General Hospital, Croesnewydd-road, Wrexham.

WREXHAM. MAELOR GENERAL HOSPITAL. Pædiatric Unit. WREXHAM, POWYS AND MAWDDACH HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the appointment of a PÆDIATRIC HOUSE PHYSICIAN for a period of 6 months, commencing 1st March, 1952. The department is comprised of a small neonatal and premature unit, together with newly-cubicled general pædiatric wards for 45 children. The successful candidate will work under supervision of the Consultant Pædiatrician and the post offers ideal opportunity for gaining experience in all branches of children's diseases.

Applications, giving full particulars, together with copies of 2 recent testimonials, should be sent to—

WILLIAM JONES, Secretary, Wrexham,
Powys and Mawddach Hospital Management Committee.
Maelor General Hospital, Croesnewydd-road, Wrexham.

YORK A AND TADCASTER HOSPITAL MANAGEMENT COMMITTEE. Applications invited for the following posts :—

County Hospital, York (General Hospital of 269 Beds with full Consultant staff)
City Hospital, York

E.N.T. HOUSE SURGEON. The E.N.T. Department (which is mainly at the County Hospital) has approximately 30 Beds, is recognised for the D.L.O., and offers excellent opportunities for learning the specialty. Appointment is for 6 months initially and vacant immediately. Previous experience preferable but not essential. Residence available at County Hospital. Post graded House Officer. Salary £350 for first post, £400 for second post, £450 for third post, less £100 for residence.

City Hospital, York (Modern General Hospital of 265 Beds with full Consultant staff)

CASUALTY AND ORTHOPÆDIC OFFICER. Post graded Junior Hospital Medical Officer. Post vacant immediately. Salary £700–£50–£1000. Residence available for which £153 is charged. Person appointed can be non-resident or partly resident.

Fairfield Sanatorium, York
County Hospital, York
City Hospital, York

SENIOR HOUSE OFFICER in Chest Diseases and General Medicine, to spend approximately half-time at Fairfield Sanatorium (63 Beds), and at the City Hospital where 8 Beds are reserved for investigation of chest cases, and where outpatient refill clinics are held, the remainder of time at the County and City General Hospitals (269 and 265 Beds respectively), in the Department of General Medicine. Previous experience in treatment of tuberculosis an advantage. Salary £670, with deduction for residence near Sanatorium suitable for married or single medical officer.

County Hospital, York
City Hospital, York
Yearsley Bridge Hospital (Infectious Diseases Hospital of 86 Beds)

SENIOR HOUSE OFFICER in Pædiatrics and Infectious Diseases to spend approximately half-time in connection with pædiatric duties at the County Hospital (22 pædiatric beds), City Hospital (32 pædiatric beds), and other hospitals of the Group, and approximately half-time at Yearsley Bridge Hospital. Candidates should have had previous experience of pædiatrics and infectious diseases. Preference given to holders of D.C.H. Post vacant from 1st April, 1952, for 1 year in first instance. Salary £670 p.a., less £170 for residence at Yearsley Bridge Hospital.

Applications, giving age, nationality, experience, qualifications, and names of 2 referees, to be forwarded immediately to—

F. A. MILNES, Esq., F.R.A., A.L.A.A., Secretary,
York A and Tadcaster Hospital Management Committee.
Bootham Park, York.

WINDSOR, BERKS. KING EDWARD VII HOSPITAL. OBSTETRICAL AND GYNÆCOLOGICAL HOUSE SURGEON required for post vacant 1st April. Salary on national scale. The successful candidate will be resident at the Old Windsor Unit of the Hospital

Applications, stating age nationality, qualifications with dates, together with copies of recent testimonials or the names of 3 referees, should be sent to the Administrative Officer.

WINDSOR, BERKS. KING EDWARD VII HOSPITAL. HOUSE SURGEON in General Surgery required immediately : post recognised for F.R.C.S. Salary on national scale.

Applications, stating age, experience, qualifications with dates, nationality, together with copies of recent testimonials, should be sent to the Administrative Officer.

WINDSOR, BERKS. KING EDWARD VII HOSPITAL. HOUSE SURGEON in General Surgery (Male or Female) required for post vacant 2nd March. Post recognised for F.R.C.S. Salary on national scale.

Applications, stating age, qualifications with dates, and nationality, together with copies of recent testimonials, should be sent to the Administrative Officer.

WOLVERHAMPTON HOSPITAL MANAGEMENT COMMITTEE, GROUP NO. 16, BIRMINGHAM REGION.

The Royal Hospital, Wolverhampton (an Associated Hospital of the University of Birmingham Medical School)
SENIOR HOUSE OFFICER (Fracture and Orthopædic Department).
HOUSE OFFICER (Fracture and Orthopædic Department).
HOUSE OFFICER (E.N.T. Department).
HOUSE OFFICER (Junior Casualty Officer).
HOUSE OFFICER (general surgery).
HOUSE OFFICER (Junior Anæsthetist). Recognised for Diploma in Anæsthetics.
HOUSE OFFICER (general medicine).

New Cross Hospital, Wolverhampton
HOUSE OFFICER (general surgery).

Applications, with copies of 3 recent testimonials, to be sent to W. COCKBURN, Group Secretary.
The Royal Hospital, Wolverhampton.

WORCESTER. RONKSWOOD HOSPITAL, Newtown-road, WORCESTER. (326 Beds.) Applications are invited from registered medical practitioners for the post of RESIDENT SENIOR HOUSE OFFICER (gynæcology and genito-urinary) for which there are 40 Beds allotted.

Applications, with copies of testimonials, to the Administrator, Group 25 Birmingham (Selly Oak) Hospital Management Committee.

NORTHERN IRELAND HOSPITALS AUTHORITY invite applications for a whole-time post as REGISTRAR or SENIOR HOUSE OFFICER in Psychiatry, at Tyrone and Fermanagh Hospital, Omagh, co. Tyrone. The appointment may be as Senior House Officer or Senior or Principal Registrar, the analogous grades in Great Britain being Senior House Officer, Registrar, and Senior Registrar respectively.

Applications should be made on a form, which may be obtained (with further particulars) from the Secretary, Northern Ireland Hospitals Authority, Friends' Provident Building, 58, Howard-street, Belfast, and which must be returned so as to be received not later than 8th March, 1952.

NEW YORK. ALBANY HOSPITAL. Pediatric Assistant RESIDENCY, for 1 year starting July, 1952, at the above Hospital. An active teaching service of the Albany Medical College carrying approval of the American Board of Pediatrics. Maintenance plus $50 a month.

Albany Hospital, Albany, New York, U.S.A.

NEW YORK. ALBANY HOSPITAL. Approved E.N.T. RESIDENCY available 1st July, 1952, at Albany Hospital, affiliated with Albany Medical College, Albany, New York. Salary $1200.

NEW YORK. ALBANY HOSPITAL. Internships and RESIDENCIES available in Albany Hospital, Albany, New York, 750-Bed General Hospital, directly associated with Albany Medical College. House Officers receive appointments in medical school.

Details on request.

NEW YORK. ALBANY HOSPITAL AND ALBANY MEDICAL COLLEGE offer 2-year RESIDENCY in Anesthesiology to graduates of approved medical schools who have completed 1 year of an approved internship.

For further information write to MEREL H. HARMEL, M.D., Albany Hospital, Albany 1, New York, U.S.A.

UNITED STATES UROLOGY RESIDENT. Large general hospital, located in medical centre. 3-year appointment in Urology, approved by American Medical Association Specialty Board and College of Surgeons. Appointment starts 1st July, 1952. Salary plus full maintenance.

Apply to Superintendent, St. Joseph's Hospital, Memphis, 7 Tennessee.

FRANCE. HERTFORD BRITISH HOSPITAL. Applications are invited for post of RESIDENT MEDICAL OFFICER, tenable for 6 months. Hospital comprises 37 Beds, including 5 in Obstetrical Unit. Salary £400 p.a., plus emoluments. Post will shortly be vacant. Knowledge of French essential.

Applications should be addressed to the Secretary, Hertford British Hospital, 48, Rue de Villiers, Levallois-Perret (Seine), France.

Public Appointments

TOTTENHAM. BOROUGH OF TOTTENHAM. Applications are invited for the post of DEPUTY MEDICAL OFFICER OF HEALTH from duly registered medical practitioners holding the Diploma of Public Health. The officer appointed will be required to devote 30% of his time to the work of the Area Health Service of the Middlesex County Council. The salary will be £1298 15s. p.a., rising by 5 annual increments of £53 15s. and 1 of £18 15s. to £1586 5s. p.a. The appointment is subject to the provisions of the Local Government Superannuation Act, 1937, and to the satisfactory passing of a medical examination. Details of the terms of the appointment may be obtained from the Medical Officer of Health, Town Hall, Tottenham, N.15.

Applications must comply with the above-mentioned conditions and must be received by the undersigned in envelopes endorsed " Deputy Medical Officer of Health," not later than 12 NOON on Saturday, 1st March, 1952. Canvassing disqualifies.

M. LINDSAY TAYLOR, Town Clerk.
Town Hall, Tottenham, N.15.

BIRMINGHAM. CITY OF BIRMINGHAM. Public HEALTH DEPARTMENT. Applications are invited for the appointment of ASSISTANT ADMINISTRATIVE MEDICAL OFFICER in the Maternity and Child Welfare Department. The work in this department includes duties in connection with children of all ages in the care of the Children's Committee. Applicants should have had experience in work with mothers and children, including a 6 months resident post in a maternity hospital and in a children's hospital. The D.P.H. or the D.C.H. and any administrative experience will be considered an additional qualification. The salary scale is £1050–£50–£1250, the commencing salary within the scale depending on the medical officer's experience. The appointment is subject to the provisions of the Local Government Superannuation Act, 1937, and the successful candidate will be required to pass a medical examination. The appointment will be subject to 1 month's notice on either side.

Applications, endorsed "Assistant Administrative Medical Officer for Maternity and Child Welfare," giving full details of training and experience, together with copies of 3 recent testimonials, should be submitted on a form obtainable from the Medical Officer of Health, Council House, Birmingham, 3, and returned to him on or before 3rd March, 1952.

HER MAJESTY'S COLONIAL SERVICE, Malaya. Doctors having medical qualifications registrable by the General Medical Council in the United Kingdom with 1 or more years experience after qualification, are required for appointments as:—

MEDICAL OFFICERS and MEDICAL OFFICERS OF HEALTH for general medical and health duties.

Appointment is available :—

(*a*) on probation for permanent establishment ; (*b*) on employment from the National Health Service, and (*c*) on short-term contract with gratuity :—

(*a*) Permanent terms. Subject to 3 years probation, appointment is permanent with pension (non-contributory) at age 55. Salary is paid in the scale £952–£42–£1204–£1274–£42–£1652 p.a. There are many posts, specialist and administrative, available on promotion carrying higher salaries (up to about £2400 for the highest post). Promotion is often made before reaching the top (£1652) of the long scale. There is also a cost-of-living allowance at varying rates, according to family circumstances, subject to maximum of £336 p.a. for single men, and of £707 p.a. for married men with children (both rates higher when stationed in Singapore).

Note.—Doctors with more than 1 year's approved experience after age 25 (including service in H.M. Forces) enter the salary scale at points above the minimum according to their experience ; *and* 4 increments of salary are also given to holders of approved higher qualifications (e.g., F.R.C.S., M.R.C.P., D.P.M., D.A., &c.).

(*b*) National Health Service. Doctors may resign from the National Health Service but retain their superannuation rights during their time in Malaya (up to 6 years) and receive a resettlement grant of 20% of the aggregate of their Malayan salary on leaving Malaya at the end of their engagements. Emoluments as under (*a*) including incremental credit for experience and higher qualifications as in note under (*a*). Doctors so appointed may be considered for permanent terms at any time during their colonial employment provided they surrender their rights to the resettlement grant and payment by Malayan Governments of superannuation contributions.

(*c*) Contract terms. The contract will be for 3 years resident service, renewable for a further tour of 3 years by mutual agreement. Salary and cost-of-living allowance as under (*a*) including incremental credit for experience and higher qualifications as in note under (*a*). In addition a gratuity earned at the rate of £300–£450 p.a. according to salary is paid on expiry of contract.

Doctors on contract may be considered for appointment to the permanent establishment at any time on their agreeing to surrender their gratuity earning rights.

In all 3 types of appointment the rates of salary and gratuity refer to doctors eligible for "expatriate terms" under Malayan Regulations (i.e., those whose permanent homes are in the United Kingdom, Ireland, Australia, Canada, &c.).

A limited number of practitioners liable for call up under the National Service Act, 1948, may apply, and if appointed will be granted indefinite deferment of call up on completion of a minimum period of 1 tour of 3 years in the Malayan Medical Service.

The climate is, for the tropics, healthy. European children do well up to the age of about 6 and schools are available locally. Income-tax is payable at Malayan rates which are lower than those in the United Kingdom. Government quarters with heavy furniture are provided at a low rental or an allowance is paid in lieu of quarters. Free passages are provided for the doctor, his wife, and children under the age of 10 (not exceeding 4 persons besides himself) on appointment and once each way during each tour of duty of 3–4 years. Generous home leave is granted and local leave is permissible. The social and recreational facilities in Malaya are good.

Applications forms can be obtained from the Director of Recruitment (Colonial Service), Colonial Office, Sanctuary Buildings, Great Smith-street, London, S.W.1 (quoting reference No. 27215/242/51).

GLAMORGAN EDUCATION AUTHORITY. Rhondda URBAN DISTRICT COUNCIL. COMMITTEE FOR EDUCATION. Applications are invited from registered medical practitioners for appointment as ASSISTANT MEDICAL OFFICER, under the supervision of the District School Medical Officer at a salary of £850 p.a., rising by annual increments of £50 to £1150 p.a. Preference will be given to candidates holding the D.P.H. or D.C.H., and experience in pædiatrics will be an advantage. The successful candidate, if in need of housing accommodation and not already a resident of the Rhondda Urban Area, may be offered the tenancy of a Council house.

Forms of application and conditions of appointment may be obtained from the District School Medical Officer, Tydfil House, Pentre, Rhondda, by whom completed applications should be received as soon as possible.

D. J. JONES, Clerk of the Council.

GOVERNMENT OF INDIA. Required for the Irwin Hospital, New Delhi, under the Colombo Plan for Technical Coöperation in South and South-East Asia, an ORTHOPÆDIC SURGEON with postgraduate qualifications and at least 10 years experience in the practice and teaching of orthopædics, to act as Consultant and to train postgraduate and undergraduate students. The Irwin Hospital is a general hospital of 300 Beds with a large surgical section where all types of general surgery, including orthopædics, are done. Candidates should be between 30 and 55 years. 2-year appointment in first instance with first-class return passage. Salary £3250 (taxable in this country) with substantial allowances (tax free) and free board and lodging.

Write, giving age, full particulars of experience and qualifications, to the Secretary (Division 5A), Ministry of Health, Savile-row, London, W.1.

GLOUCESTERSHIRE COUNTY COUNCIL. Appli-cations are invited for the appointment of ASSISTANT COUNTY MEDICAL OFFICER OF HEALTH (Male). Salary in accordance with the Whitley Council for Health Services, Medical Council, £850 p.a., rising by annual increments of £50 to £1150 p.a. The commencing salary within this scale will be determined in accordance with the candidate's previous Local Government experience. Applicants must be registered medical practitioners and the possession of a Diploma or Certificate in Public Health will be an advantage. The appointment will be superannuable and the successful applicant will be required to pass a medical examination. Candidates must be able to drive and be in possession of a car ; travelling and subsistence allowances will be paid in accordance with the Council's scale.

Forms of application with particulars of duties and conditions of appointment may be obtained from the County Medical Officer of Health, Berkeley House, Berkeley-street, Gloucester, to whom completed applications should be sent within 14 days of this advertisement.

GUY H. DAVIS, Clerk of the County Council.

Shire Hall, Gloucester.

IPSWICH. COUNTY BOROUGH OF IPSWICH. Appli-cations are invited from registered medical practitioners for the appointment of ASSISTANT MEDICAL OFFICER AND HEALTH AND SCHOOL MEDICAL OFFICER ; the possession of the D.P.H. or the D.C.H. is a desirable qualification although not essential. Salary will be £850–£50–£1150 p.a. A commencing salary above the minimum of the grade may be fixed, having due regard to the experience of the applicant. The post is established and superannuable. The Officer appointed will be required to provide, maintain, and use a car in the course of the duties for which an allowance will be paid.

Application forms and conditions of appointment may be obtained from the Medical Officer of Health, Elm-street, Ipswich.

Town Hall, Ipswich. J. C. NELSON, Town Clerk.

MINISTRY OF LABOUR AND NATIONAL SERVICE. MEDICAL BOARDS AND DISABLEMENT ADVISORY COMMITTEES. From time to time vacancies occur in the panels of medical practitioners who are prepared to serve, as required, as members of National Service Medical Boards. Such Boards meet at intervals according to the requirements of the area, and payment is on a sessional basis. A general practitioner wishing to be considered for any vacancy which might arise in the panel of the Medical Board nearest to the district in which he resides, should make his wish known to the appropriate Local Medical Committee or to the Secretary, Ministry of Labour and National Service, Cumberland-terrace, London, N.W.1.

Occasional vacancies also occur in the membership of that Department's Disablement Advisory Committees and their Panels. A general practitioner wishing to be considered for such appointment should similarly apply to his Local Medical Committee or the Secretary, Ministry of Labour and National Service, 32, St. James's-square, S.W.1.

NOTTINGHAMSHIRE. THE COUNTY COUNCIL invite applications for the appointment of COUNTY MEDICAL OFFICER OF HEALTH at a salary of £2450 p.a., rising by 3 annual increments of £100 to £2750 p.a. Candidates must possess the qualifications prescribed by the Local Government Act, 1933, have wide knowledge and experience of the duties of a Medical Officer of Health and possess sound administrative and organising ability.

Full particulars of the appointment may be obtained from my office and completed applications should reach me by 5th March, 1952. Canvassing, directly or indirectly, will be a disqualification.

K. TWEEDALE MEABY, Clerk of the County Council.

Shire Hall, Nottingham, February, 1952.

WORCESTERSHIRE COUNTY COUNCIL. Applications are invited from registered medical practitioners (Men or Women) for the whole-time post of ASSISTANT COUNTY MEDICAL OFFICER with additional Public Health duties. The duties will chiefly concern School Health and Child Welfare Services. The possession of the D.C.H. or the D.P.H. and experience in connection with infectious diseases will be in advantage. The salary and conditions of service will be in accordance with the recent award of the Industrial Court —i.e., £850 p.a., rising by annual increments of £50 to £1150. Past experience will be considered in fixing the starting-point within the scale. The successful candidate must own and drive a car. The holder of this appointment (now vacant) also acted as occasional Deputy at the Hayley Green Isolation Hospital and to the Medical Officer of Health for the boroughs of Halesowen and Stourbridge for which additional payment is made ; the appointed Officer will be considered for all or any of these additional appointments. The post is superannuable, subject to medical examination and determinable by 3 months notice.

Applications on forms to be obtained from the County Medical Officer, County Buildings, Worcester, should be returned to him by 29th February, 1952.

W. R. SCURFIELD, Clerk of the County Council (X43).

February, 1952.

ROYAL NAVAL MEDICAL SERVICE

Candidates are invited for service as Medical Officers in the Royal Navy—preferably below 28 years.

They must be British subjects whose parents are British subjects, and be medically fit. No examination will be held but an interview will be required.

Initial entry will be for 4 years' short service after which gratuity of £600 (tax free) is payable, but permanent commissions are available for selected short service officers.

Officers entered on or after 1st January, 1951, will be eligible to be considered for ante-dates of seniority up to 2 years for service in recognized civil hospitals, etc.

For full details apply MEDICAL DIRECTOR-GENERAL, Admiralty, S.W.1.

PRISON AND BORSTAL SERVICE. Psychiatric Social WORKERS (Women). Applications are invited for 3 posts in the above service at Liverpool, Manchester, and London. Salary £420–£20–£580 p.a.; starting pay according to age, experience, and qualifications. Pensionable under the National Health Service superannuation scheme. Applicants must hold the Mental Health Certificate of either the University of Edinburgh, London, or Manchester, and should preferably be experienced in mental work.

Regulations and application forms from Establishment Officer (E84/3/6), Prison Commission, Horseferry House, Dean Ryle-street, London, S.W.1, to be returned by 1st March.

SWANSEA. COUNTY BOROUGH OF SWANSEA. Applications are invited from duly qualified medical practitioners for the post of ASSISTANT MEDICAL OFFICER (Female). Applicants must have had postgraduate resident hospital experience and should be under 45 years of age unless already holding a similar superannuable appointment. Salary £850–£50–£1150 p.a.

Application forms may be obtained from the Medical Officer of Health, Public Health Department, The Guildhall, Swansea, to whom they should be returned not later than Monday, 25th February, 1952. Canvassing, either directly or indirectly, is a disqualification. T. B. BOWEN, Town Clerk.

The Guildhall, Swansea, 4th February, 1952.

WARWICKSHIRE COUNTY COUNCIL. County Medical Officer of Health's Department. Applications are invited from registered medical practitioners for the permanent appointments of 2 ASSISTANT COUNTY MEDICAL OFFICERS OF HEALTH (Male or Female). Preference will be given to those holding D.P.H. or D.C.H. and with previous experience. Salary according to experience within the following scale: £850 p.a. by annual increments of £50 to a maximum of £1150 p.a. The posts are superannuable and appointment is subject to the production of a satisfactory medical certificate. The successful candidates will be required to provide and use a motor-car in the performance of their duties, for which a mileage allowance is payable.

Further particulars (including details of area) and application forms may be obtained from the County Medical Officer of Health, Shire Hall, Warwick. Closing date for applications is 1st March, 1952.

L. EDGAR STEPHENS, Clerk of the Council.

Shire Hall, Warwick, 4th February, 1952.

General Practice

For an Executive Council post apply on form E.C.16A obtainable from the council. Mark envelope "Vacancy."

KINGSTON UPON HULL. Applications invited for VACANCY (urban). List at present approximately 2350. Surgery accommodation may be available. Residence not available. Apply on Form E.C.16A before 6th March, 1952, to—

J. W. MILTON, Kingston upon Hull Executive Council.

52, Ferensway, Kingston upon Hull.

PEMBROKE DOCK, PEMBROKESHIRE. Applications are invited for VACANCY in the above urban area. List approximately 2300. Applications on Form E.C.16A to reach the undersigned before Monday, 3rd March, 1952.

W. C. SCOURFIELD, Clerk, Pembrokeshire Executive Council.

9, Quay-street, Haverfordwest.

TOTTENHAM. Applications invited for Vacancy (urban). List at present approximately 5000. Residence and surgery not available. Apply on E.C.16A before 1st March, 1952, to—

F. J. ASHFORD, Middlesex Executive Council.

Gloucester House, Gloucester Gate, London, N.W.1.

Hospital Services: Non-Medical Appointments

KING EDWARD MEMORIAL HOSPITAL, Ealing. SOUTH WEST MIDDLESEX HOSPITAL MANAGEMENT COMMITTEE. HISTOLOGICAL TECHNICIAN required. Candidates should be Associates of I.M.L.T. with Diploma in Histology, but consideration will be given to those with Intermediate Diploma. Training facilities and experience for all diplomas I.M.L.T. Whitley salary and conditions.

Applications in writing, stating age, experience, and names of 2 referees, to Pathologist in Charge at Hospital.

Miscellaneous

Cardiographer, experienced, Male, available to hospital, private practice, London area, evenings, weekends. Instrument not provided.—Address, No. 640, THE LANCET Office, 7, Adam-street, Adelphi, London, W.C.2.

Medical Appointment. Wanted immediately, Doctor for a Whaling Station at South Georgia. Higher qualifications necessary. Salary £100 per month—board and lodging provided.—Applications to Medical Superintendent, CHR. SALVESEN & CO., 29, Bernard-street, Leith.

London Pharmaceutical House requires full-time services of registered medical practitioner (Male), of good address, aged 30–40, for special publicity work. Salary £1000 p.a. Please give full particulars of experience.—Address, No. 641, THE LANCET Office, 7, Adam-street, Adelphi, London, W.C.2.

Wanted, Assistantship, early view to Partnership or succession, by experienced lady doctor.—Address, No. 633, THE LANCET Office, 7, Adam-street, Adelphi, London W.C.2.

Wanted, Assistant. Partnership offered, young post-graduate, foreign doctor not objected to.—Address, No. 637, THE LANCET Office, 7, Adam-street, Adelphi, London, W.C.2.

Experienced Consultant's Secretary/Shorthand-Typist. High speeds. Accurate. Seeks London post. Initiative, keen, able assist consulting-room and accept responsibility. Full or part time. Disengaged. Moderate salary. Excellent references.—Address, No. 639, THE LANCET Office, 7, Adam-street, Adelphi, London, W.C.2.

South Coast. Well-equipped Nursing-home. Luxuriously furnished. Can accommodate 20 patients, or could be used as Sanatorium, School, Private Hotel, Private Residence, or for Institutional purposes. 10 acres. Excellent fruit and vegetable garden. Vacant possession of whole. For sale as it stands complete with furniture.—Apply: W. HUGHES & SON, Estate Agents, 1, Unity-street, Bristol, 1 (Telephone 21259).

Freehold House and Surgery for Sale. Near London Bridge.—Address, No. 638, THE LANCET Office, 7, Adam-street, Adelphi, London, W.C.2.

Harley-street. Modern attractive house would be sold, owner leasing back ground floor for own consulting-rooms, vacant possession of remainder, costly marble mantels, mahogany doors, parquet floors, &c., £12,500 for 65 years at only £125 p.a. ground rent.—Address, No. 636, THE LANCET Office, 7, Adam-street, Adelphi, London, W.C.2.

Nameplates in bronze-enamel and brass. Send size and lettering for estimate.—OSBORNE, 117, Gower-street, London, W.C.1.

"Pregnancy Diagnosis by the Xenopus Method." 24-hour service.—Send specimen of urine and £1 1s. fee to: WELBECK BIOLOGICAL LABORATORIES, 26, Park-crescent, Portland-place, W.1. (Telephone: MUSeum 5386–7).

Applicants for posts requiring testimonials copied or duplicated should communicate with MANTON SECRETARIAL SERVICE, LTD., 98, Victoria-street, S.W.1 (Phone: VICtoria 0141), who are specialists in this kind of work.

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Readers of The Lancet will be interested in the "Inter-national Journal of Sexology." This Journal, with Editorial Boards in more than 20 different countries (ranging from Australia to America, Sweden to China, Israel to Czechoslovakia, and Germany to Spain) provides the only really international medium for the exchange of news and views and the publication of original work on human relations in sex and marriage. The members of the Editorial Board for the British Isles are Dr. Clifford Allen, Mr. Ambrose Appelbe, LL.B., Dr. Eustace Chesser, Mr. Alec Craig, Prof. F. A. E. Crew, M.D., F.R.S., Dr. E. Elkan, and Mr. Kenneth Walker, F.R.C.S., with Mr. Cyril Bibby, M.SC., as Editor.—Medical practitioners interested are invited to apply for a specimen copy and details of subscription rates to the British Agents: A. VERNON KEITH & CO., Napier House, 24/7, High Holborn, W.C.1.

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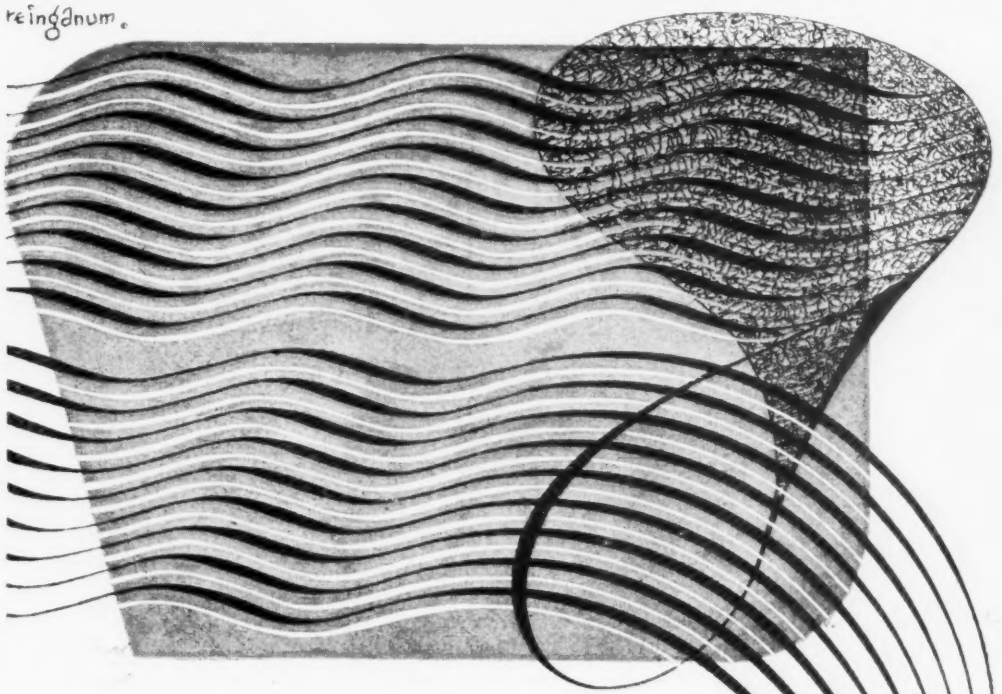

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